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# UNEXPECTED

# Keys

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BIG ADVENTURES IN  
FLORIDA'S PREMIER  
DIVE DESTINATION)

**BEAT DIVER'S  
BACKACHE**

*Tips To End Post-Dive Pain*

**DON'T GET LEFT AT SEA**

*5 Best Signaling Devices*

JULY 2004

PUBLICATION MAIL AGREEMENT #40063752

MANTA FROM  
MARGARITAVILLE:  
A rare encounter off Key Largo.



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( EDITOR'S NOTE )

## Cover Story

The fantastic and the familiar converge in the Keys. **BY BUCK BUTLER**

**W**HEN SCUBA DIVING PHOTO DIRECTOR Stephen Frink suggested the topic for his column in this issue—"Make the Familiar Fascinating," pg. 87—even he had no idea how fitting that idea would be. The column is about techniques photographers can use to create extraordinary images on familiar underwater turf. And soon after he wrote the column, Steve had an extraordinary encounter on the reefs in his own backyard.

Having lived in Key Largo, Fla., for 25 years, Steve has dived the "name" reefs there more times than he can count, but, he says, the familiarity of the scene never gets old. "I suspect most underwater photographers feel the same way about the sites they dive frequently," he says. "No matter how many times you've been there, there's always something new to shoot."

For his daughter Lexy's 11th birthday, Steve chartered a boat to take Lexy and her classmates out for some snorkeling off Key Largo. Tied to a mooring buoy on a shallow reef, they were just about to light the candles on the birthday cake when they spotted a black form swimming around the boat. Soon, the twin cephalic lobes of a manta ray became clear, and Steve knew that he was in for a once-in-a-lifetime photo op.

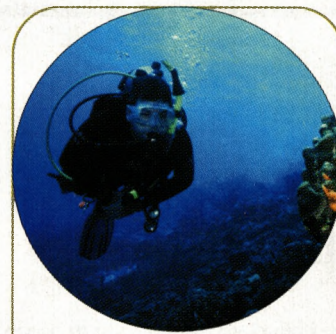


Fourteen kids donned masks and fins, and splashed into the water while Steve frantically assembled dive and photo gear, assuming the

big ray would be long gone by the time he joined the throng. Instead, the manta actually swam toward him. The kids circled above on snorkel, and the manta hung around long enough for Steve to shoot three rolls of film, swimming back to the boat each time to change film. The result is this issue's striking cover image.

"It occurred to me that I have traveled to Yap, the Maldives and the Socorro Islands specifically for manta rays," Steve said. "And the best encounter I ever had was in my hometown, at a reef I've probably dived 200 times."

The sighting of the manta in Margaritaville was serendipitous for us not only because Steve's column is about finding the fantastic in the familiar, but because this issue's travel guide is about Steve's home turf, the Florida Keys. And, as Steve can attest, the guiding principle for reef divers here is the same as for tourists on Key West's Duval Street after midnight: Expect the unexpected.



( WINNER )

## BE LIKE RALF—GET FREE GEAR!

Ralf Kircher, a 34-year-old newspaper columnist from Naples, Fla., is the lucky winner of the Grand Prize in this year's Reader Ratings Sweepstakes. As the winner, Ralf gets a brand-new Tusa Platina Evolution BC, a Tusa Platina RS-230 regulator and a Tusa Imprex Analog 2 gauge console.

Want to be like Ralf? You too can win big prizes by simply rating your recent dive experiences. To fill out a Reader Ratings form and enter our next sweepstakes, go to [www.scubadiving.com/readersrate](http://www.scubadiving.com/readersrate).

( CORRECTION )

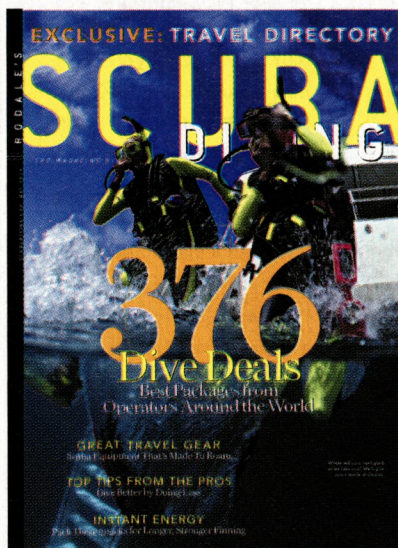
In the May '04 issue of *Scuba Diving*, we published an incorrect ad for Peter Hughes Diving. The ad included information on a vessel no longer in Peter Hughes live-aboard fleet. We apologize for any confusion this may have caused.



## ( LETTERS )

# One-Stop Vacation Planning

OVER THE LAST FEW YEARS, the *Scuba Diving International Dive Travel Directory* (May '04) has become one of my favorite issues of the year, thanks to the hundreds of packages listed for dive operators around the world. I've devised my own way to use the directory that your other readers might like to try. First, I decide on a bud-



get for my next weeklong dive trip. Next, I flip through the directory, being careful not to look at the names of the destinations, and I circle every package that fits within my budget. Then I go back through the issue to see all the places I can afford to go. It's amazing to find out how many exotic destinations my relatively small budget can take me to, even after I factor in airfare. Thanks to you, I spent a week diving in Curaçao last year when I had planned to spend a week lounging at the Jersey shore! —Don Jenkins, Norristown, Pa.

**Next Floor, Pinpoint Buoyancy I FINALLY GET IT!** Thanks to the clear explanation in your article, "Less Is More" (May 2004), I now understand why dive-masters encourage me to wear less lead on my weight belt. I always figured that by using more weight, I would have an easier time staying on the bottom. Of course, it was easy to get down and stay down, but I could never get neutral and stay neutral when I was swimming over a reef. I was constantly playing with my buoyancy, moving up and down in the water like an elevator. Thanks to your article, I should be having fewer ups and downs in the future. — David Laird, Santa Monica, Calif.

## ( HOW TO REACH US )

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**MAIL:** Editor, Rodale's Scuba Diving, 6600 Abercorn St., Suite 208, Savannah, GA 31405

## ( THE NUMBERS )

### A CURE FOR REGULATOR DRY MOUTH

# 54%

Percentage of divers who say a cold beer is their post-dive drink of choice.

### ON THE ROAD AGAIN

# 81%

Percentage of divers who plan to travel out of the country on a dive trip this year.

(Source: Surveys of users on [www.scubadiving.com](http://www.scubadiving.com).)

## ( ONLINE )

**Product of the Week** If you're like most divers, there's no way to have too much information before you make a major gear purchase. And [ScubaDiving.com](http://ScubaDiving.com) is one of the best sources in the world for in-depth gear info. Along with ScubaLab gear reviews and the exclusive GearFinder tool, you'll find a new "Product of the Week" feature highlighting dive equipment. From fins to computers to gear bags, look for something new on [ScubaDiving.com](http://ScubaDiving.com)'s home page every week.



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SCUBA  
DIVING

The class of 2004: ScubaLab puts new regs to the test.

## 52 15 Regulators Rated

It's the race-horses against the workhorses in a ScubaLab showdown as newcomers battle for bragging rights as the best breathers of the year. *By John Brumm*

DIVE LOG

**60 Dominica** This Eastern Caribbean jewel, a lush wonderland of submerged walls and towering waterfalls, is a rare marriage of underwater life and topside splendor. *By Michael Lawrence*

## 68 Best Destinations for Small Animals

For macro photographers and other sharp-eyed divers, great things come in tiny packages. Fortunately for them, our readers have rated the top places where some of the world's smallest creatures can be found in abundance.

LESSONS FOR LIFE

**70 Boat vs. Diver** A captain's quick thinking saves the day when two divers lose control of a shallow river drift dive. *By Michael Ange*

Cover photo by Stephen Frink.





# SCUBA DIVING

## THE GREAT DIVES

### 17 THIS MONTH'S MUST-SEE

**DIVES** include a wild ride through an atoll pass in the Tuamotus, an easy shore entry on a tiny islet off Aruba and a colorfully decorated kelp forest in California's Channel Islands.

## CURRENTS

**22 A JADE DIVER RETURNS** to the site of his biggest triumph for another monster stone.

## GEAR

### 75 SURFACE SIGNALING

**DEVICES** You're here. The boat's way over there. Bridge the gap with these signaling devices.

## TRAINING

**79 YOUR BODY** Banish back pain with eight exercises designed to get you in shape for diving and keep the chiropractor at bay.

**84 ADVANCED DIVING** With several tanks and a tangle of hoses, a technical dive rig looks complicated, but it's actually an exercise in minimalism and efficiency.

**87 PHOTOGRAPHY** Change your approach to create remarkable images in unremarkable circumstances.

**91 DIVE INSURANCE 101** In an overseas emergency, your dive insurance could save your life. We'll help you pick the policy that's best for you.



Abundant fish life is just one of many reasons to rediscover the Florida Keys.

## TRAVEL

**34 THE INCOMPARABLE KEYS** Thought you knew the Florida Keys? Think again. Each one of these islands offers extraordinary dive options and an alluring vibe all its own.

**41 DRIVE & DIVE** The ice-cold rivers and spring-fed lakes of Montana and Wyoming make diving the Wild West a summertime thrill.

3 TALK 49 DIVE DEALS 97 IN DEPTH 104 LOOK



**mazda6** ALL-NEW 5-DOOR It's all about the drive. Sometimes the most forward-thinking innovations start in the back. Consider the rear lift gate on this new MAZDA6. Lift it, pull a lever, and the back seats flatten faster than you can say "cargo capability." Admire for a moment the race-ready stance. Now comes the most thrilling part. The drive. That's when the available 220-hp V6 combines with the sport-tuned suspension, leaving no doubt that Mazda has once again endowed sheer innovation with the soul of a sports car.



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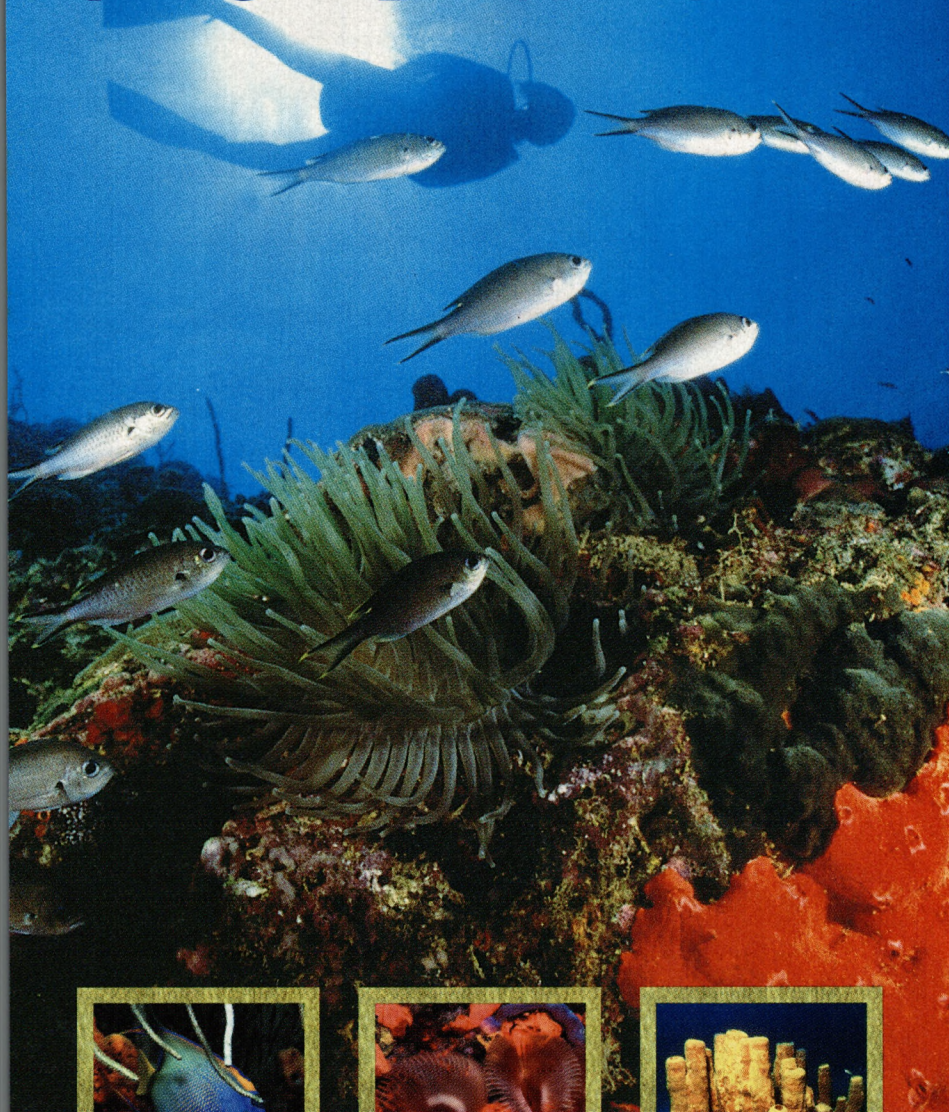
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DIVE OF THE MONTH

**DE PALM SLOPE, ARUBA.** The snorkeling off the private 375-foot-long De Palm Island is like a visit to Disneyland. But scuba divers can bypass the 27-foot shallows, past the bus, past two airplanes, past hand-fed blue parrotfish, to a wall that drops 150 feet with less-traveled paths that lead to random pieces of history embedded among corals, sea fans, eels and octopuses.

On one end of the De Palm Slope wall, sponges cluster on the propeller of a light airplane and other nearby wreckage.

PHOTOGRAPH BY CARLOS MINGUELL

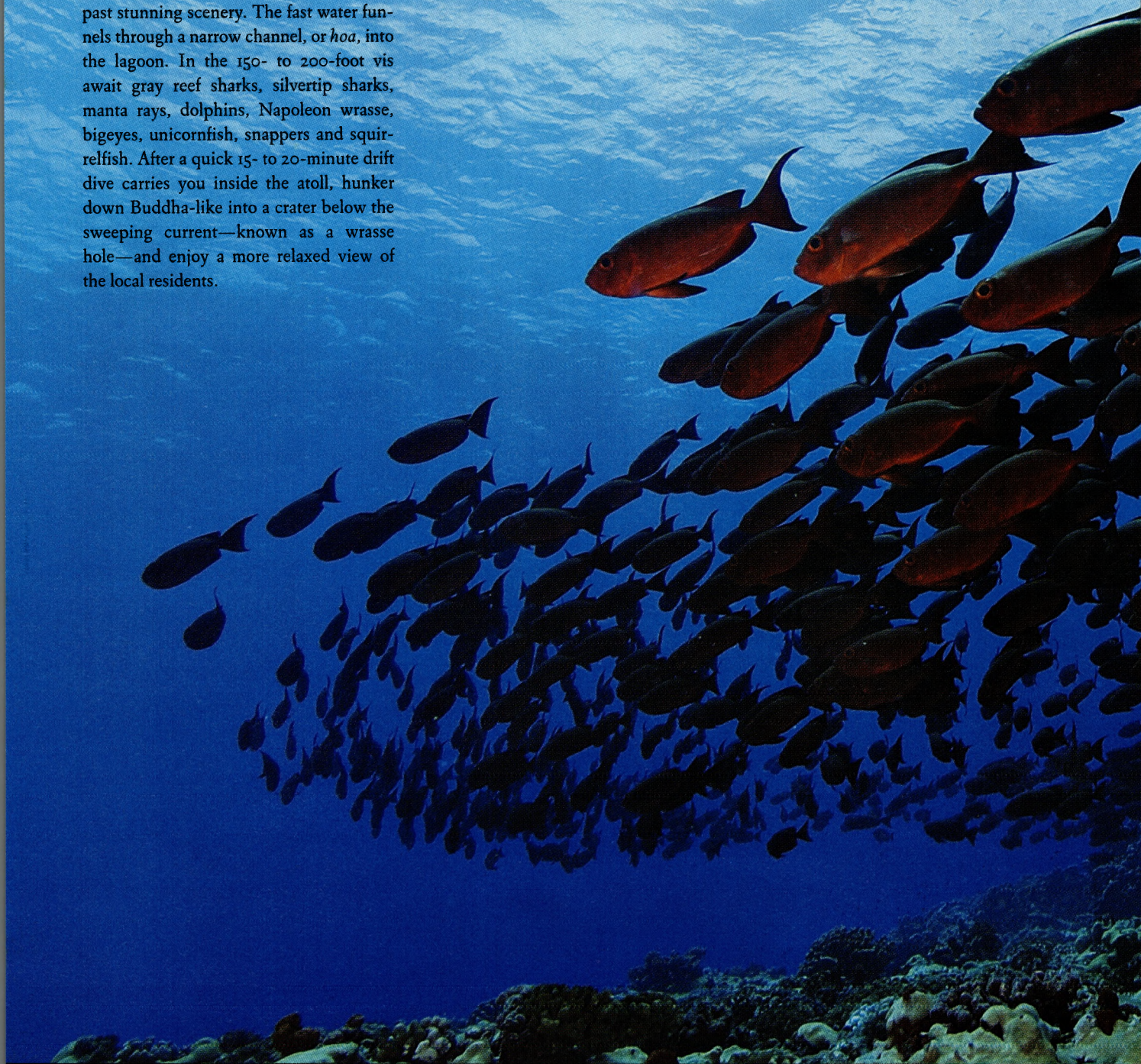
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( FRENCH POLYNESIA )

## Toau Pass, Toau Atoll

**UNDER A RUMPLED BLANKET** of blue at Toau Pass you'll find pristine reefs and fin-catching currents that sweep divers past stunning scenery. The fast water funnels through a narrow channel, or *hoa*, into the lagoon. In the 150- to 200-foot vis await gray reef sharks, silvertip sharks, manta rays, dolphins, Napoleon wrasse, bigeyes, unicornfish, snappers and squirrelfish. After a quick 15- to 20-minute drift dive carries you inside the atoll, hunker down Buddha-like into a crater below the sweeping current—known as a wrasse hole—and enjoy a more relaxed view of the local residents.







An army of bigeyes parades past a wrasse hole inside the lagoon at Toau Atoll.



( CALIFORNIA )

## Cat Rock, Anacapa Island

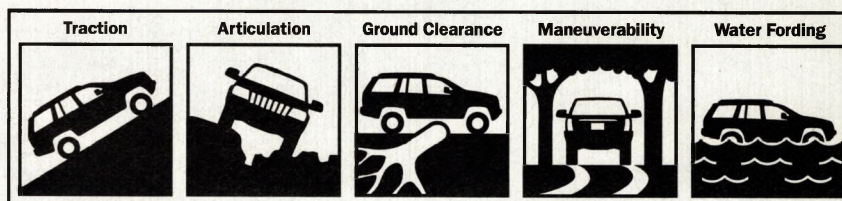
**DIP DEEP INTO** the kelp forest toward the rocky seafloor off the south side of Anacapa Island to find technicolor algae, sea fans, urchins and anemones. The location of this dive site is nearly ideal, nestled between Cat Rock and Anacapa Island, in a cove sheltered from the fierce northern winds that blow here. Temperate-water species, including garibaldi, goby, sheep-head and kelp bass, reside here alongside lobsters and moray eels. Deep crevices shelter colorful tube, telia and moonglow anemones, and Spanish shawl nudibranchs aplenty. Vivid constellations of sea stars brighten the dark seafloor: reddish bat stars, blue-gray giant stars and bright-orange blood stars. Sea lions and seals frequent the cliffs of Anacapa and often join divers for a swim. **SD**

**GET THERE** > For more information on these Great Dives, turn to In Depth, page 97, section 1.

Kelp forests rise and fall according to the season at the sheltered Cat Rock dive site.



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WITH ANYTHING BUT GOOD INTENTIONS.



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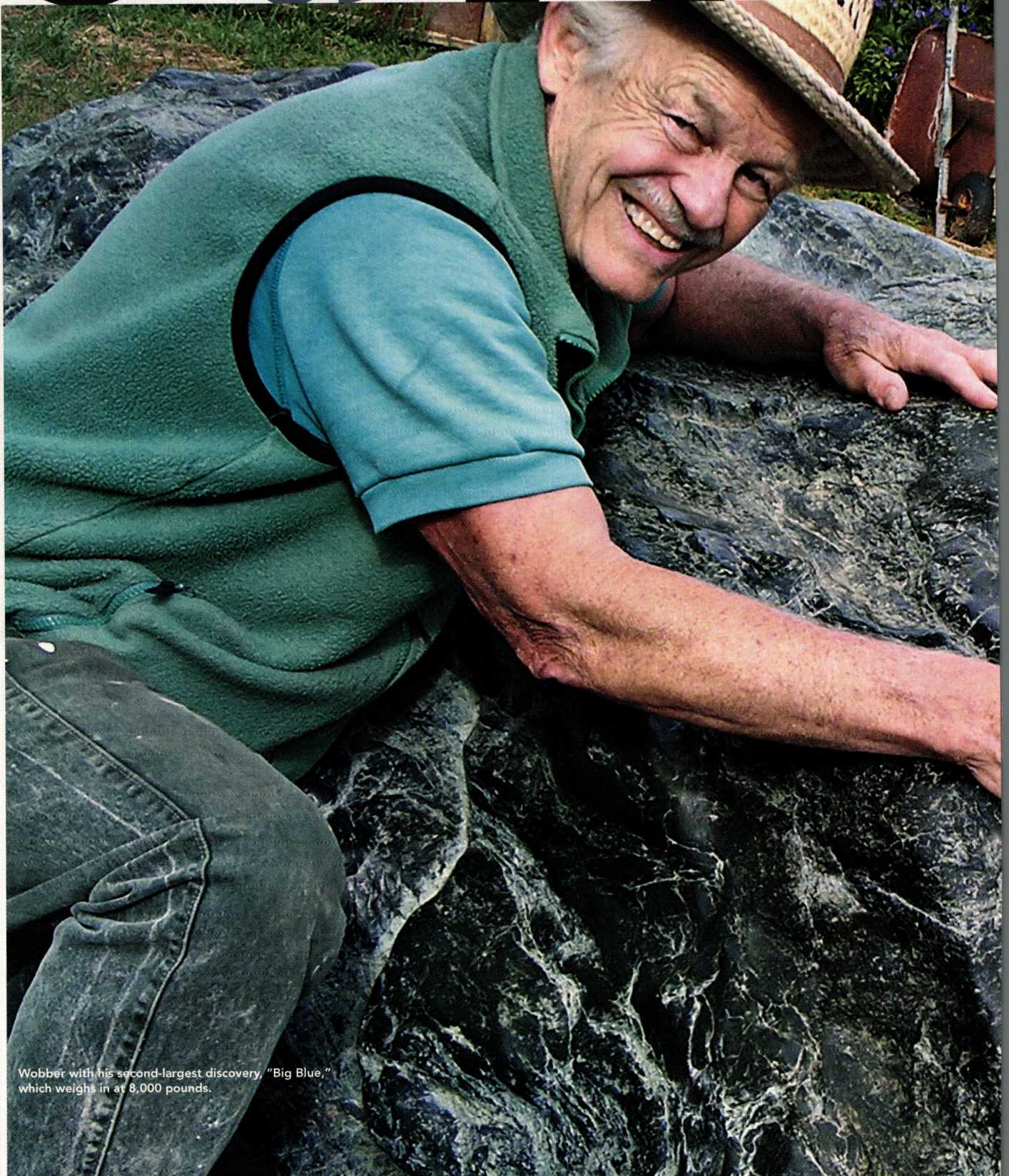


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# Curre



Wobber with his second-largest discovery, "Big Blue," which weighs in at 8,000 pounds.





# nt s



PHOTOGRAPH BY RYAN MASTERS

( QUEST )

## Romancing the Stone

**A lifelong jade diver returns to the site of his biggest triumph for another monster rock.**

Don Wobber, 76, is a Northern California legend. For the last 50 years, he has frequently carried 100 pounds of scuba gear up and down the treacherous trail that leads to Jade Cove, at the edge of Big Sur's Los Padres National Forest. Here, at the base of a steep marine terrace, lies the only underwater concentration of jade in the world.

Often diving alone, Wobber descends into the cold green waters to hunt for jade, which he sculpts into world-renowned art. In 1987, *National Geographic* ranked Wobber "among the best of the world's contemporary jade sculptors."

But what he may be most famous for is a 9,000-pound monolith of pure jade named "The Nephripod," which he discovered in 1970 wedged beneath an overhang in 30 feet of water. From the moment he saw it, he became obsessed with the idea of bringing it up by hand.

Strict regulations prohibited the use of mechanical devices, so he developed a hazardous strategy to float the stone off the seafloor using a specially designed sled, a steel mesh net and rubberized canvas bags, which he filled with air from his own tank to displace the jade's weight. When the Nephripod finally broke the surface, Wobber had successfully raised the biggest jade rock ever to come out of the ocean; he donated it to the Oakland Museum in 1976.

Now, Wobber is at it again. He has located another jade boulder—this one is about 3,000 pounds—in the cove and is applying for permits to bring it up this summer. Once again, he plans to donate the stone, this time to the Pacific Grove Museum of Natural History. —RYAN MASTERS





Saint-Ex: no top gun, but his legacy endures.

( SALVAGE )

## A NEW PIECE TO A LITERARY PUZZLE

Antoine de Saint-Exupéry's plane is discovered in the Mediterranean.

Returning from a World War II reconnaissance mission in 1944, Antoine de Saint-Exupéry, the French airman and author of *The Little Prince*, vanished along with his plane, becoming one of aviation's greatest mysteries—right up there with Amelia Earhart's disappearance seven years earlier. Now, with the recent discovery of his long-lost aircraft by French scuba divers, the question of what actually happened to Saint-Exupéry on a July day 60 years ago has recaptured the public imagination.

It has always been tempting to read between the lines of *The Little Prince* for clues. The much-loved children's classic is a planet-hopping fable about innocence, about not being in sync with the demands of a grown-up life. Critics have long thought Saint-Exupéry was writing about himself, and many conjectured that he never meant to return from his last voyage: that it was his ultimate planet-hop.

On the other hand, it could have just been a terrible accident—and given his record, not entirely unexpected. Saint-Ex, as everyone called him, was hardly the top gun in his squadron: He'd been grounded once for mangling an expensive aircraft, was said to be uncomfortable with newer planes, and at 44, his age when he died, he was older than most of his fellow pilots.

At last, clue-mongers have some hard data to work with. This spring, when divers salvaged an engine and landing gear in the Mediterranean, in 100 to 300 feet of water near Marseille, they positively identified the wreckage as coming from Saint-Exupéry's Lockheed Lightning P-38. Evidence suggests that the plane made a high-speed, near-vertical descent into the sea; why is the question. But maybe finding the plane is enough to end this story, and Saint-Ex's premature death should be left at that: a riddle without an answer, like a question the Little Prince himself might pose.

( GET INVOLVED )

## One Little Fishy, Two...

This month, the *Great Annual Fish Count* invites volunteer divers to help identify fish and document population trends in marine sanctuaries and other areas designated by the Reef Environmental Education Foundation (REEF). [www.fishcount.org](http://www.fishcount.org)

( STAT )

# 14

Number of consecutive days Mark Webber, a South Manchester, England, truck driver, plans to spend this fall submerged in a 12-foot-tall water-filled tank. Currently training for the event—which he hopes will “annihilate” the existing record (just under nine days) for time under water—Webber will wear a full face mask and tanks, subsist on a liquid diet and sleep on a soggy bunk bed; all funds raised will go to area hospices.



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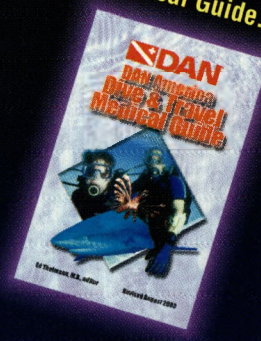
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( STUDY )

## OOZE NEWS

Why coral reefs get slimed.

A recent study conducted at Heron Island, on Australia's Great Barrier Reef, revealed a new side to the slimy mucus that many hard and soft corals produce on a continuous basis.

It's known that coral secretes mucus to remove sediment, prevent infections and protect against drying out during air exposure at low tide. What scientists recently learned, however, is that this transparent, gel-like substance is also important for feeding reef organisms. "We found that mucus helps keep nutrients in the reef ecosystem as well as gain nutrients from outside the system," says lead researcher Christian Wild of the Max Planck Institute of Marine Microbiology in Germany.

Up to 80 percent of coral mucus dissolves quickly in the water, but some is stickier and drifts away in clumps, snaring organic material that passes by the reef. At Heron Island, researchers observed that tidal currents carry such nutrient-rich matter from the reef into an enclosed lagoon. There, as it sinks and filters through the lagoon's sandy bottom, it breaks down into elemental substances by bacteria, algae, bottom-dwelling invertebrates and fish. These nutrients then circulate back to the reef, where the cycle continues.

The discovery of such a tight recycling loop, says Wild, may help explain how coral reefs can be so productive in the often nutrient-poor oceans where they grow. —LANCE LEONHARDT



At Heron Island, coral reefs reveal an ingenious recycling system.

( QUOTE )

Manatees lead to manatee deaths.  
The more you have, the more are going to die.

—FLORIDA STATE SENATOR MIKE BENNETT, WHO PROPOSES RELAXING MANATEE PROTECTION LAWS ON THE GROUNDS THAT THE ENDANGERED SPECIES HAS SEEN RECENT POPULATION GROWTH.

CHRISTIAN WILD



*St. John - St. Croix - St. Thomas*



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( HEIST )

## CURSES, FOILED AGAIN

A would-be bank robber doesn't get away with an underwater getaway.

Late one April afternoon, a 35-year-old man named Charles Coma entered a bank in Olympia, Wash., dressed in a wetsuit. Wielding an assault rifle and demanding money, Coma grabbed an undisclosed amount from a teller and fled to his car. Maybe it was a case of nerves or maybe he was just a god-awful driver, but, whatever the reason, the would-be thief crashed his car into a tree just two miles from the scene of the crime.

Still, he stuck to his getaway plan: to finish off this madcap heist under water. He made a frantic, quarter-mile dash for the water, now wearing a weight belt over his wetsuit and lugging his tank, regulator and cash-filled backpack.

The police tackled him onshore, subdued him with a stun gun and retrieved the money.

No doubt, all that extra weight foiled his hopes for a swift escape, but he did make one good call. As police spokesman Tor Bjornstad reported, there is "no truth to the rumor he was running in flippers."



HAL MAYFORTH

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April, 2004

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Rodale's Scuba Diving magazine  
November, 2003



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( REEFS )

## Arm after Arm

A grandfather swims the Yucatan Channel to save the reefs.

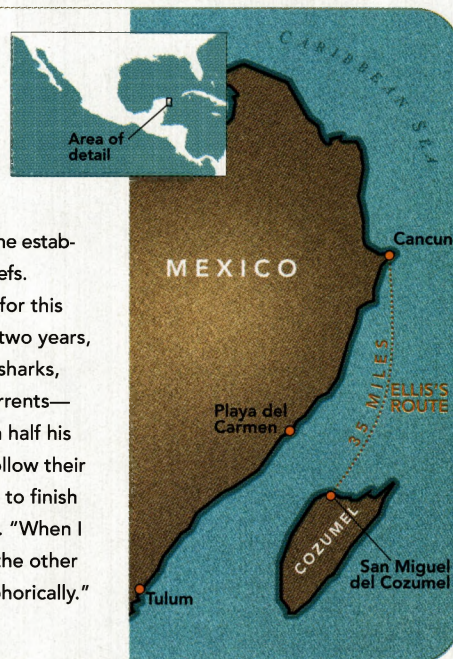
Twenty-five years ago, Paul Ellis was blown away by the beauty of the reefs off Mexico's Yucatan Peninsula. Five years ago, he returned to the same reefs, and was blown away by how much they'd deteriorated. Now, the 61-year-old has decided to swim the 35-mile stretch from Cozumel to Cancun to increase awareness of the imperiled marine ecosystem.

On Aug. 5, Ellis, a former marine aviator and CEO of Austin Business College in Austin, Texas, will take the plunge to prove that one person can make a difference. His goal: to

raise money for Swim for the Reef ([www.swim4thereef.com](http://www.swim4thereef.com)), a charity he established to help protect the world's reefs.

Even though Ellis trained for this swimathon for more than two years, the elements involved—sharks, storms and changing currents—would be risky for a man half his age. His three sons will follow their father in a boat. "It's my job to finish the swim," says a determined Ellis. "When I take off, I'll say, 'See you guys on the other side,' and I don't mean that metaphorically."

—GINA MARSHALL



BRAD BOYD, ANGEL PRODUCTIONS

# The Reviews Are In!

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**"Second to None"** *Sport Diver* magazine  
August, 2003

**"The SS1 breathes better than many primary-use regulators** and generated the **best overall simulator performance** among the integrated inflator/regs...and earned **the highest ergonomic scores** of all the units we tested."

**"Better Alternatives"** *Rodale's Scuba Diving* magazine  
Scubalab, Jan/Feb 2004

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## L I F E

( FISH ID )

## What's This?

You'll find this tropical fish swishing through seagrass beds and algal flats in the Pacific and Indian oceans, between the east coast of Africa and the Marshall and Tonga islands. Because its coloring can be any combination of red, gray and brown, and it's often flecked with white, orange or dusky spots, this creature is an ace at camouflage and often goes unnoticed. It uses its snaggletooths to break off little pieces of algae-covered coral, which it chews and then excretes as white sand. Thanks to its beak-like jaw, this utterly harmless fish is named after a brilliantly colored bird.

---

*t h e* A N S W E R

---

RAGGEDTOOTH PARROTFISH, *Calotomus spinidens*



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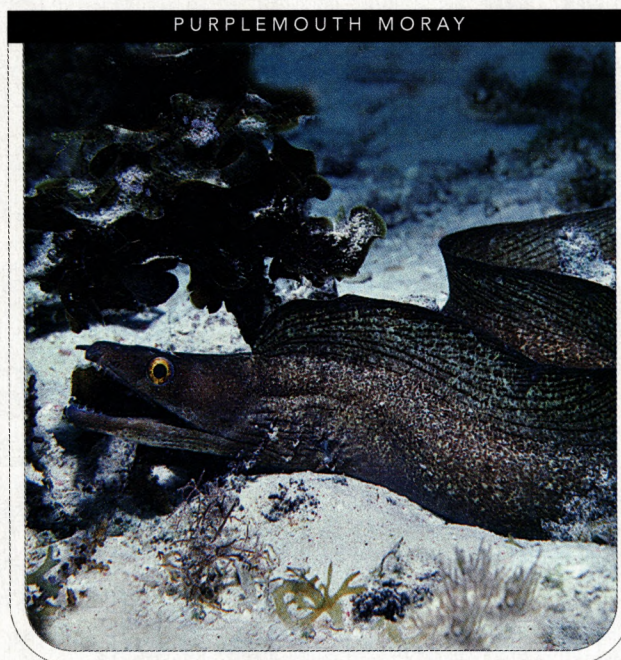
# the DIFFERENCE

It's easy to distinguish eels from other kinds of fish, but can you tell one family of eels from another?

One of the earliest thrills for many divers is that first close encounter with a moray eel and its teeth. The animal's elongated, finless body more closely resembles that of a reptile than a fish, but fish it is, represented by more than 200 family members distributed worldwide in tropical seas. There is also

another large family of similar-appearing fishes, commonly known as snake eels, which also inhabit temperate waters.

Differentiating between the two families can be a bit tricky, but a few particulars easily sort the matter out. Morays are the apex predators of the reef's inner sanctum. With long, slender, malleable bodies, and one of the keenest senses of smell in the animal kingdom, they are perfectly designed for home invasion. Those species with large mouths and sharp teeth



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pluck fishes and octopuses from dark hiding holes. Species with small mouths and blunt crushing jaws prefer crustaceans, primarily crabs. If you see an octopus with fewer than eight arms, it's a safe bet that it was a victim of a moray encounter.

In contrast, snake eels inhabit sand, where they lie hidden for hours with only their forward-set eyes and snouts exposed. When prey happens along, the ambush predators lunge with surprising speed and power.

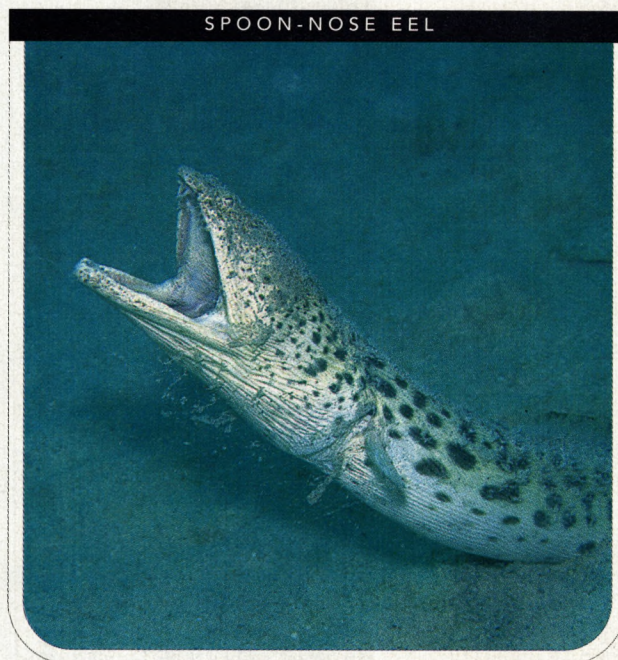
Anatomically, morays are usually more robust than snake eels and wear a band of fins that begins behind the head and encircles much of the body. The same median fins of snake eels

are barely noticeable, and a few species have tiny pectoral fins, a feature always absent on morays.

Morays commonly rest with their heads exposed and their mouths agape, as if to advertise a combative disposition. In reality, their disquieting posture is not a threat, but simply a way to pump water over their gills for respiration.

In fact, morays are more like Muppets than mambas, although if molested they can bite back nastily. Most of the few moray wounds inflicted on divers occur at fish-feeding sites, when enthusiasm for a meal coupled with poor eyesight leads to easy mistakes. —PAUL HUMANN AND NED DELOACH

SPOON-NOSE EEL



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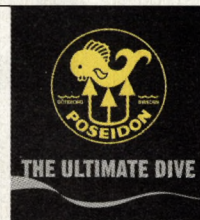


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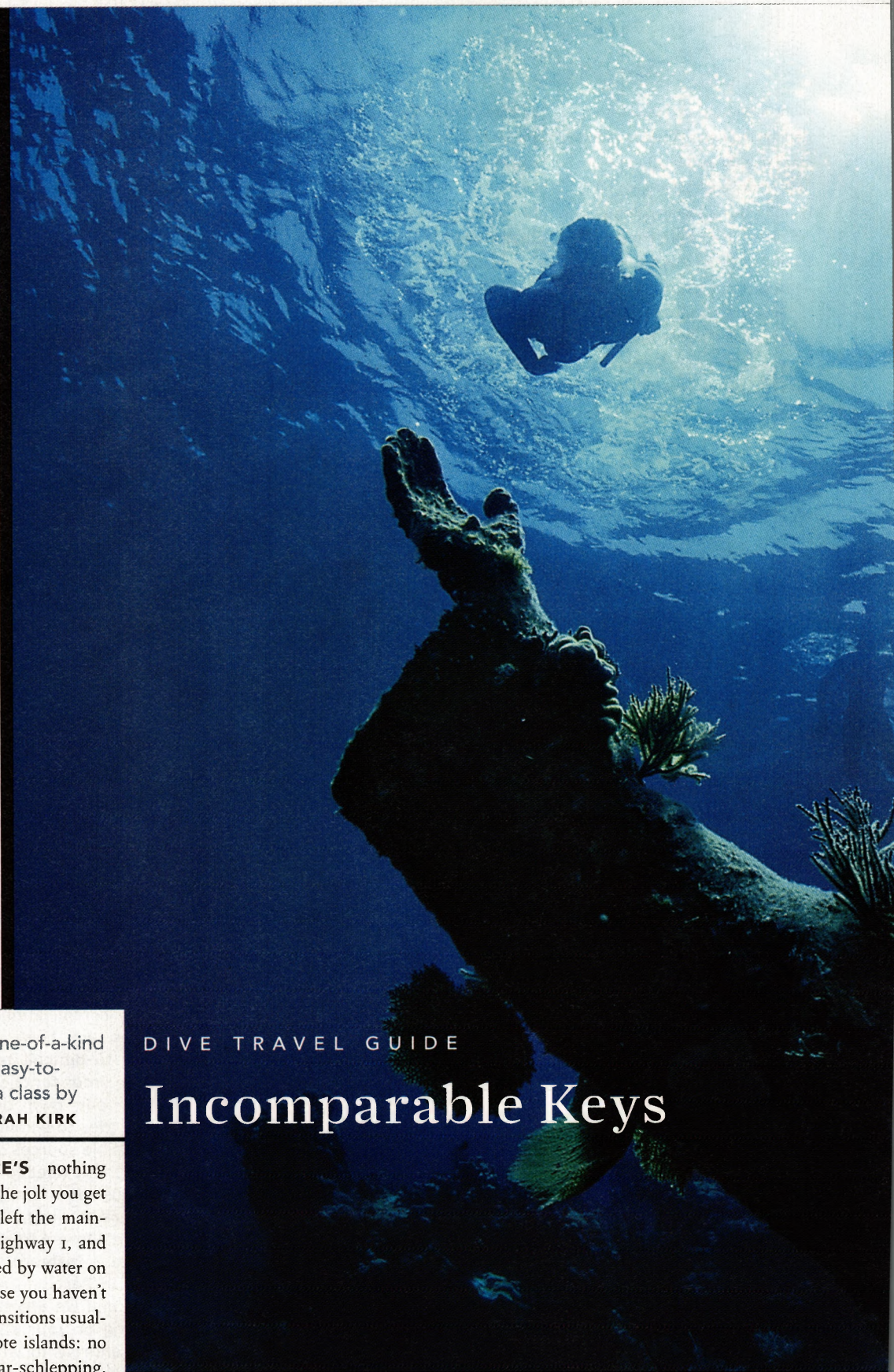
# Travel

Superb diving and a one-of-a-kind topside vibe put the easy-to-reach Florida Keys in a class by themselves. **BY DEBORAH KIRK**

**T**HERE'S nothing like the jolt you get when you realize you've left the mainland, driving south on Highway 1, and you find you're surrounded by water on all sides. It's a rush because you haven't had to make any of the transitions usually required to reach remote islands: no flights, no ferries, no gear-schlepping.

DIVE TRAVEL GUIDE

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The Duane's radar tower attracts schools of angelfish and parrotfish, among others.

You didn't even have to leave your car.

The Florida Keys are a paradox in nearly every way. They're part of the U.S., but connected only by a slender thread. Geographically (and to a large extent psychically) they belong to the American South, but at their southernmost point they're closer to Cuba than to Miami. The denizens of this subtropical archipelago are an offbeat grab bag defying easy classification: Fishermen, drug-runners, Bible-thumpers, avant-

gardists, megastars, mulletheads and Parrot Heads all live here, and that's just scratching the surface. It's to this eclectic offshoot of the continental U.S. that I've come for a week of diving, mainly to see if the underwater realms can parallel the topside—and its funky mix of inhabitants—for sheer diversity.

I started my sojourn in the Keys the way I begin most trips: with a wrong

turn. The islands are linked by a single road—the fabled Overseas Highway—so once you've hit the Keys themselves, it's hard to make a mistake: one false move and you're in either the Gulf or the Atlantic. But as I approached the Keys I somehow got myself onto a desolate, overgrown stretch called Card Sound Road. It was instant shock therapy. Just minutes before, I'd been in Miami, and now I was catapulted onto a long, lightless, peopleless road that looked completely untouched by modernity. However indirectly, Card Sound Road does get you to the Keys, and it's actually a good way to begin the experience: It forces you to think about how isolation is the natural state of these islands and that their connection to the rest of the country is fragile and entirely man-made.

## Key Largo

**KEY LARGO CALLS ITSELF** the diving capital of the world. Whether this is a fact or a case of well-intentioned hyperbole doesn't really matter, because the dives here are up there with the best of them. What is beyond dispute is the beauty of Key Largo's John Pennekamp Coral Reef State

PAUL OSMOND (LEFT); TOM & THERESA STACK (BOTTOM)



The marine sanctuary teems with vibrant hard and soft corals.



Park, the first underwater state park in the U.S. Along with the adjacent waters of the Florida Keys National Marine Sanctuary, this 178-nautical-square-mile preserve features easily accessible reefs, a multitude of shipwrecks and a much photographed, coral-encrusted statue of Christ, beatifically poised in 25 feet of water.

The newest addition to Key Largo's underwater landscape is the mammoth *Spiegel Grove*, a 510-foot former navel vessel. With the top of the deck reaching about 50 feet and vertically descending to 130 feet below, the *Spiegel Grove* has become the Keys' most thrilling wall dive; the effect is like a sheer drop-off with an invisible bottom. Divers often return multiple times because it's impossible to grasp the ship's immensity in one visit (imagine an eight-story building that's nearly as long as two football fields, and you've got a rough idea). Though it's only been down for two years, it's showing promising coral cover and drawing abundant fish; there's no reason not to believe that it won't eventually be as blanketed with life as older wrecks in the area.

Two of these, the Coast Guard cutters *Duane* and *Bibb*, were sunk in 1987 and are now among Key Largo's must-dives. When in service in the '40s, these sister ships worked together in the North Atlantic; in the '60s, both were stationed in Vietnam.

Now it seems only right that they spend their afterlife together, a quarter-mile



Kayaking through the mangroves in the Keys' back country.

apart, just outside the marine sanctuary's southwest border. Sitting upright in 120 feet of water, the thickly encrusted *Duane* gets lots of action (angelfish, parrotfish, permit, among others) in the 60- to 90-foot range, between the top of its mast and its deck. The *Bibb*, like the *Spiegel Grove*, rests on its starboard side at 130 feet, and though divers are discouraged from swimming into either of these prone wrecks, an impressive variety of fish (barracuda, grouper, crevalle jacks, to name a few) and encrusting coral can be seen hugging every surface.

Topside, everyone thinks Key West has cornered the market on weirdness, but Key Largo should not be overlooked in this

department. Key Largo has a quirky flavor all its own, running the gamut from the classy to the downright kitschy. It has a number of excellent seafood restaurants and well-appointed resorts, as well as some bona fide oddities, like Jules' Undersea Lodge, a submerged hotel gurgling in a strangely still lagoon, and the *African Queen*, the original boat from the 1947 movie classic that's been immobilized at the Holiday Inn's marina ever since its last captain died a couple of years ago.

## Islamorada

**EVERY LOCATION IN THE KEYS** is identified by mile markers—green-and-white signs dotting the roadside—which is a whole lot easier than trying to figure out what Key you're on at any given moment. As you head south from Key Largo, the next major dive zone is Islamorada, a name that confusingly seems to cover a bunch of small-ish keys, so the mile-marker system is the best way to orient yourself in these precincts.

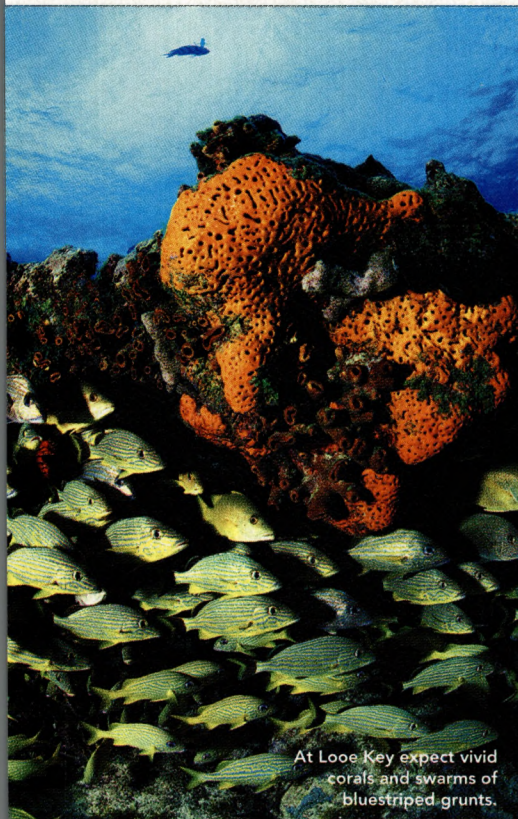
The big draw in Islamorada is the *Eagle*, a freighter that was sunk in 1985 in 110 feet of water. Hurricane Georges ripped through it 13 years later, leaving two gaping halves that are now home to tarpon, crevalle

TOM STACK

## THE KEYS GET AN ECO-COMPLEX

**NEXT YEAR**, when the Dr. Nancy Foster Florida Keys Environmental Complex opens its doors, the inner workings of the marine environment will be put on spectacular display. The **\$8.5 million compound**, on a prime plot of land in downtown Key West, will house, among many other things, the new headquarters of the Florida Keys Marine Sanctuary and its maintenance facility for all of the **420 mooring buoys** in its waters. Visitors to the enormous, high-tech Eco-Discovery Center—the public arm of the complex—will be able to make simulated dives, experience a research sub, and rule the ecosystem (virtually, that is). [www.NMSFocean.org](http://www.NMSFocean.org)





At Looe Key expect vivid corals and swarms of bluestriped grunts.

jacks and barracuda. This stretch of the Keys also has an appealing assortment of reefs, such as Conch and Crocker, that get masses of blue tangs, damselfish, snapper—and far fewer dive boats than you're likely to run across in Key Largo.

## Marathon

**ALONG WITH** Islamorada, Marathon is known as sportfishing nirvana, and for those who do their homework and check the strict fishing regs, there's always an armada of ready and willing charter boats to take them out. On a blustery, wind-whipped April day, I had the good luck to board a charter of a different kind, a six-pack expertly captained by veteran seaman Banny Thorne. I was dead-set on seeing the *Thunderbolt*, a fascinating wreck with lots of accessible superstructure, and thankfully Banny was game, even though his would be the only boat making the five-mile journey that day through the roiling waves. The *Thunderbolt* is a deceptively deep dive; it's 75 feet at its shallowest, but

it's easy to clock the full 120 if you're not watching your depth. Goliath grouper and barracuda cruise the pilothouse, and there's coral coverage everywhere—including the mooring line, which is sheathed in fire coral, so gloves are a must.

At nearly every point in the Keys there's a good, shallow option for beginning divers—making this entire destination well suited to family dive trips—and Marathon is no exception. Reefs like Samantha's and Porkfish—which were packed with lobster when I was there—are at an easy 15 to 30 feet.

## The Lower Keys

**JUST TO THE SOUTH** of Marathon is the Seven Mile Bridge, the longest overwater span on Highway 1 and a breathtaking crossing, with nothing but water and sky in all directions. It connects the Middle with the Lower Keys—Big Pine, Ramrod, Cudjoe—which are sleepy, wooded, nothing-fancy places that serve as good buffer zones before entering the bedlam that can be Key West.

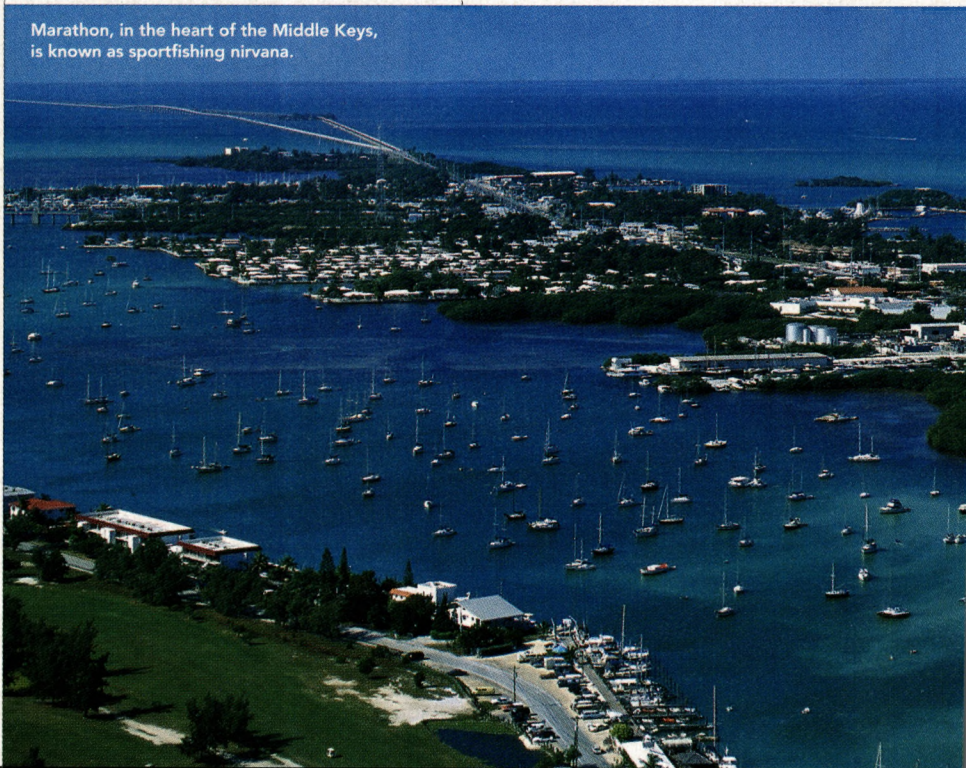
Big Pine is the second-largest Key, after

Key Largo, and is an excellent point of departure for Looe Key, seven miles offshore. To many people's minds, Looe Key offers the most beautiful reef diving in the Keys. As a protected area within the Florida Keys National Marine Sanctuary, this site is terrifically intact, brimming with elkhorn coral, sea plumes and grouper. On a bright day, there's a vividness at Looe Key you won't see anywhere else for miles around; next to sunlit sandy bottoms at just 30 feet, these reefs explode with color.

Off Ramrod Key is the wreck of the *Adolphus Busch Sr.*, a freighter renamed for the beer mogul who in 1998 sponsored its sinking in 105 feet of water. The site is known for strong currents, so expect visibility to fluctuate between a good 80 feet and a murky 25. I got unlucky vis-wise, but that didn't diminish the exhilaration—oh, did I mention I was diving with a boatload of male models from Miami?—of descending 90 feet through egg drop-soupy water to reach the *Busch's* encrusted deck. Models aside, the sight of a fully extended, open-jawed green moray sprawled on the

TOM STACK (TOP); STEPHEN FRINK (BOTTOM)

Marathon, in the heart of the Middle Keys, is known as sportfishing nirvana.





## KEY WEST: BEYOND DUVAL

**DUVAL STREET IS TO** Key West what Bourbon Street is to New Orleans: funky, beery and touristy—but with a glimmer of the real deal beneath the faux-tawdry surface. It's the obligatory first stop for visitors, who'll find jewel-like restaurants and galleries mixed in with the T-shirt shops and alehouses. Once Duval is under your belt, the rest of the island offers lots more to discover.

> **THE KEY WEST BUTTERFLY AND NATURE CONSERVANCY.** Down at the quieter end of Duval, this newly renovated building is a fluttery, weirdly intoxicating butterfly kingdom. [www.keywestbutterfly.com](http://www.keywestbutterfly.com)

> **THE MUSEUM OF ART AND HISTORY, AT THE CUSTOM HOUSE.** On exhibit through the end of 2004 is a brilliant show about how two 20th-century masters briefly crossed paths. "Ernest Hemingway and Walker Evans: Three Weeks in Cuba in 1933" includes, among other highlights, 46 original photos by Evans, many of which have never been shown because for decades they were buried in the back room of Sloppy Joe's bar. [www.kwahs.com](http://www.kwahs.com)

> **MEL FISHER MARITIME MUSEUM.** Artifacts from Mel's greatest discoveries, including the wrecks of the *Atocha* and the *Santa Margarita*. [www.melfisher.org](http://www.melfisher.org)

> **THE SOUTHERNMOST HOUSE.** An 1896 mansion far from the madding crowd, with a museum, guest rooms and a bar out back where you're bound to meet interesting characters. [www.southernmosthouse.com](http://www.southernmosthouse.com)

> **LOUIE'S BACKYARD.** Ask any local: Louie's Backyard is hands down the place for a top-flight meal. Their sunset drinks overlooking the ocean aren't too shabby, either. [www.louiesbackyard.com](http://www.louiesbackyard.com)

deck was thrill enough. Strangely, the deck also had a perfectly upright beach chair on it, which I sat in for a true *Twilight Zone* moment, as if I were lounging on a cruise ship in a parallel universe.

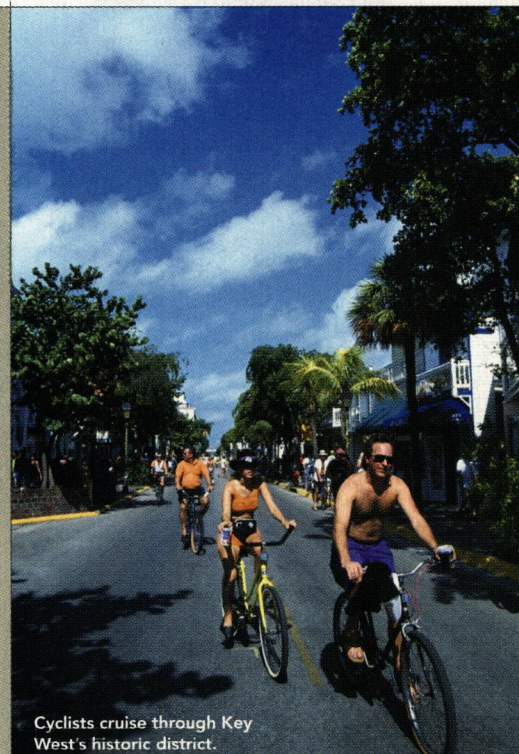
## Key West & Beyond

**THAT KEY WEST** is the proverbial end of the road—Mile Marker Zero, next stop Havana—has been its defining quality ever since railroad magnate Henry Flagler first linked it up to the mainland in 1912. It's what has attracted generations of fugitives, geniuses and freaks, and to this day it's what still pulls in crowds of curiosity-seekers looking for a bit of that original mystique. Thankfully, Key West remains delightfully free-spirited, though to some extent its rough edges have been softened and institutionalized into the collective fantasy (and empire) known as Margaritaville.

CHRIS CRUMLEY

People still come here for all reasons: artists look for solitude and inspiration; Hemingway nuts pay their idol a liquid tribute at Sloppy Joe's; treasure hunters cast about for the next *Atocha*; and Parrot Heads make dutiful pilgrimages to any place Jimmy Buffett ever set foot. For divers, it's the astonishing variety of wrecks and reefs, and the access Key West affords to outlying sites like the Dry Tortugas.

Two of the most popular wrecks are *Joe's Tug* and the *Cayman Salvage Master*, which are often done together as a morning dive. The *Salvage Master* is the larger and deeper of the two, resting on its side at 90 feet; the little tug is at 60. Count on grouper, jacks, eels and coral coverage on both wrecks, and on a clear day visibility will be up to 80 feet. Plans to sink a new wreck off Key West are under way, the permits are in hand, and the marine sanctuary has given its blessing. So if all goes as hoped, the 520-foot *General*



Cyclists cruise through Key West's historic district.

*Hoyt S. Vandenberg*, a former World War II troop transport, will sink to 140 feet later this year and become the largest artificial reef in the Keys, just edging out the monumental *Spiegel Grove*.

Key West's reefs are on the shallow side, so chances are you'll be out at Sand Key or Eastern Dry Rocks with a mix of snorkelers and first-timers. For deeper reef dives, nothing beats the truly remote Dry Tortugas, pristine islands 70 miles west of Key West. Though they're accessible only by boat or seaplane—divers often opt for live-aboards—the effort to get there is well worth it. The Tortugas are surrounded by hundreds of shipwrecks and mint-condition reefs: some, like coral-canopied Sherwood Forest, lie in the 80- to 100-foot range, others, like Texas Rock, go from 15 to 50. Diving is a year-round proposition here, but optimal conditions tend to occur in summer, when visibility can top 80 feet and the water is a comfortable 80 degrees. **SD**

**GET THERE** > For more information on diving the Florida Keys, turn to In Depth, page 100, section 5.





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Glacier National Park, Montana.



# Diving Big Sky Country

The ice-cold rivers and spring-fed lakes of Montana and Wyoming make diving the West a summertime thrill. **BY STEVE CHAPPLE**

**B**ETWEEN Glacier National Park in Montana and Yellowstone National Park on the Wyoming-Montana border are a sensational array of opportunities to dive where the wild things roam. A drive deep into this pristine wilderness puts you within easy reach of buffalo-rimmed watering holes and rushing, trout-filled rivers.

## Firehole River

**I'M BEGINNING TO FEEL** like a trout myself, suspended in 30 feet of water at the bottom of Firehole River, as I watch cutthroat dart to the surface, hit mayflies and sink back with a silvery flip of their bodies to rejoin the school in the current line above my head. A diver's bubbles usually alarm trout, but this bunch doesn't seem to care. Noise and presence are masked by cascading Mystic Falls, at the front of the deep basaltic pool, which sits in a shallow, pine-forested valley a few miles east of West Yellowstone, Mont., inside Yellowstone

National Park. Columns of sunlight pierce the river's steep canyon walls and light up the thermoclines of the gin-clear water. It's like being on the inside of a stained-glass window.

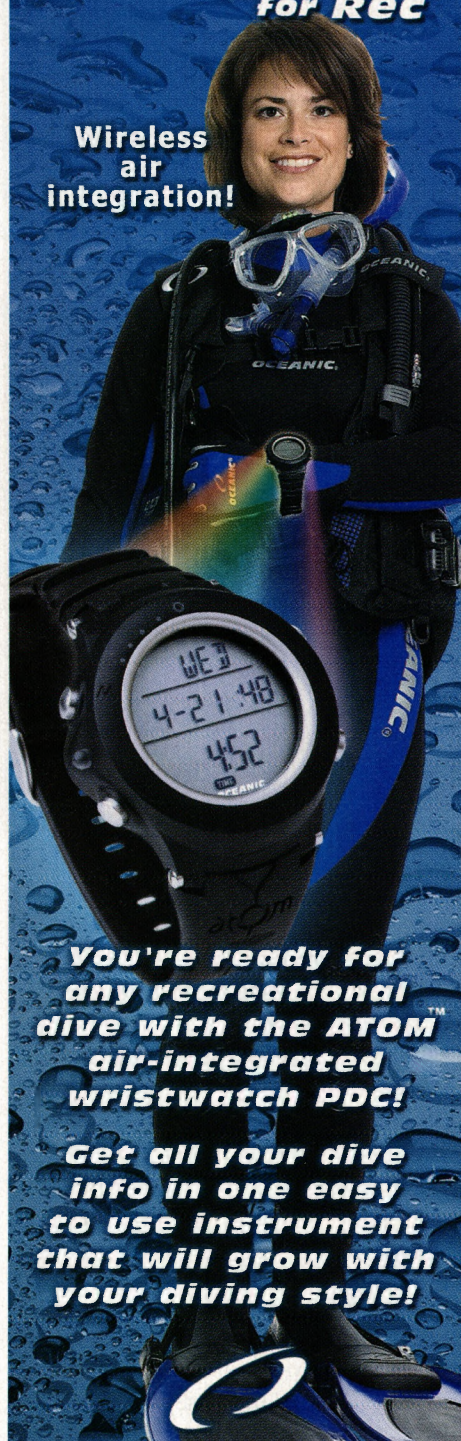
It's cold, for sure—the water in nearby Yellowstone Lake is between 40 and 60 degrees when it's not frozen, but here thermal vents from Midway Geyser Basin, upstream, dump thousands of gallons of hot water into the river. I can put my hand out and feel the temperature difference, a quick, swirling wash of warmer water. There is little underwater vegetation in this turbid bowl, however. It's a rocky Rocky Mountain aquarium, with pockets of gravel but mostly bare black rock. It seems like a lava tube, but the big hole was formed by erosion.

Access can be daunting. You pull off



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## DRIVE & DIVE



Cutthroat trout in Yellowstone's Firehole River.

Firehole Canyon Road and park carefully among the bison. Then you wait for the hairy beasts to lumber out of the parking lot so you can quickly grab your gear and hit the water. When I pulled in, there were a dozen buffalo sharing the tufts of grass at the perimeter of the asphalt, watchful moms with sharp horns and frisky calves, too. Unlike tropical diving, where sharks are what give you the most cause for concern, in

Montana and Wyoming you worry more about the land-side critters, like buffalo and bears.

From the parking lot to the river, I walked several hundred yards through a patch of burned lodgepole pine, the scalped trees sticking out like broken toothpicks. Then I half-slid, half-goat-walked down the steep incline overlooking the pool. Years ago, when I was growing up in Montana, college kids from Bozeman would pile a case or two of beer in the back of a pickup and careen



MICHAEL QUINTON (TOP)



down the two-lane roads to jump off the Firehole's short cliffs. This is strictly forbidden now, which means there's little danger of teenagers plunging in front of one's mask and disturbing the trout.

After a few minutes of acclimation, I left my underwater vantage point to explore the pocket hollows of the walls. Immediately, the current shoved me to one side. Water levels, which are determined by snowfalls and runoff, make a big difference in diving a high mountain river like the Firehole, which is at 8,200 feet. In June, you might be whipped around on the bottom, even blown out of the hole, with your regulator ripped from your mouth in the murky water. In this case, there is a reasonable swim-out a few hundred yards downstream. But I was here in August, probably the best dive month, when it's clear, with lower water levels and less push, and you can smooth about the bottom like a pregnant leopard frog or a neoprened otter.

## Yellowstone River

**JUST TO THE NORTH** of Yellowstone Park, on the Yellowstone River, I have a cabin in Paradise Valley, south of the trout-crazed town of Livingston. Here, as in the creeks nearby, the underwater life is more lush than that in the Firehole. Moss and algae cover the rocks. Willows invade the edges. There are hollows in the freestone bottom, where the big brown trout lay their eggs (or broadcast their gametes, to be technical about it). It's possible to spy a paddling Canadian goose from under water, even encounter a beaver, though impossibly rare to meet up with an otter.

I must warn, though, that river diving in Montana is not for the

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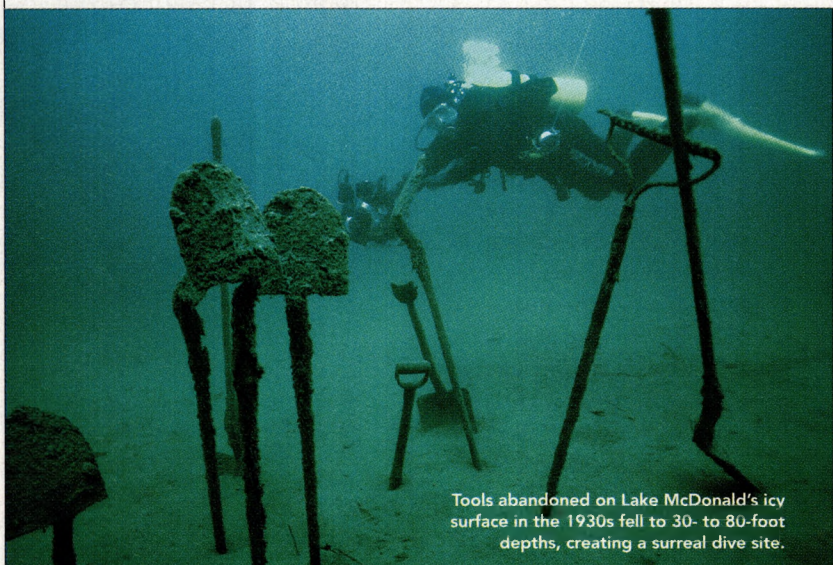
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## DRIVE & DIVE



Tools abandoned on Lake McDonald's icy surface in the 1930s fell to 30- to 80-foot depths, creating a surreal dive site.

faint of heart. Among several serious safety issues are problems caused by downed branches and jagged rocks, which can pull at hoses and belts. Experienced divers often scout (or power-snorkel) the river for calm holes, then make their descent.

Native Montana divers can be overly intrepid. I know a woman who jumped into the Missouri River at Thanksgiving, in search of archaeological detritus from sunken covered wagons, only to have her regulator freeze open. That's cold. Even so, nearly every New Year's, the diving faithful in Bozeman cut triangular holes in the ice and hold a grizzly-bear dunk at frozen-over Hyalite Reservoir, in the mountains south of town.

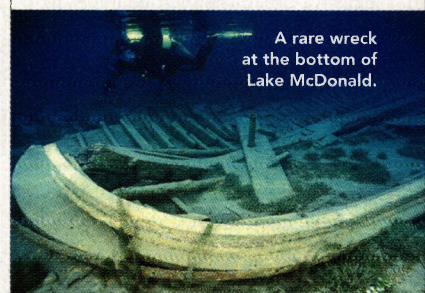
### Bighorn Reservoir

**A WARM-WATER TREAT** is Bighorn Reservoir, in Custer country, southeast of Billings on the Crow Reservation. There are interesting caves called vugs, a good Scrabble word that means crystal-filled openings. In the reservoir's shallows, it's possible to get close to fat, scaly carp and watch them slurp-feed, an activity that might disgust Montana's trout-purist anglers. There's a sere, prairie beauty to the Bighorn Reser-

voir, with its miles of cliffs and canyons fronting pellucid emerald waters. One can imagine the Cheyenne and the Crow hunting bison here as they did less than 150 years ago, when the reservoir was a meandering river. It seems strange now, to suit up in high-tech dive gear and slip below the surface of time.

### Lake McDonald & Other Wreck Dives

**WRECK DIVING** IN Montana is slim pickings. The remains of a Japanese fleet do not litter the prairie floor. At Apgar, on Lake McDonald in Glacier National Park, there is something called the Debris Field, a surreal underwater array of old stoves, vertically implanted rakes and shovels, toilets and bowls from the 1930s, with the occasional rainbow trout finning through. Across the border in Canada, at the north end of Upper Waterton Lake, in 20 to 60 feet of ice water lies the wreck of the *Gertrude*, a



A rare wreck at the bottom of Lake McDonald.



100-foot-long paddle wheeler scuttled in 1918. Back in Yellowstone is another submerged steamer, the *E.C. Waters*, a skeletal wreck burned out in 1930 and sitting in only 10 feet of water off Yellowstone Lake's Stevenson Island.

## Yellowstone Lake

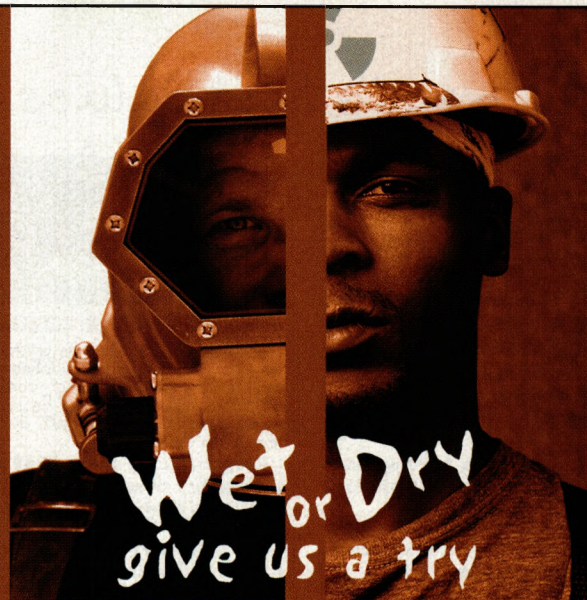
**AT THE SLOPE OFF** the West Thumb Geyser Basin in Yellowstone Lake, you can put your mask up to the rising hot spring vent and feel the contradictory heat. Here, too, you'll see fresh-water sponges, colored white to lime-green, depending



Geothermal activity at West Thumb Geyser Basin.

on depth and algae growth. The heat vents and primitive sponges remind me of similar deep-ocean vents, direct channels to the center of the earth, where life itself is believed to have first formed.

But those trout, as I watch them back in the Firehole, snacking on bugs at the surface—they've got me ruminating. What would it be like to be a trout? Yellowstone's former chief fisheries biologist, John Varley, gives an answer in his book, *Fresh-water Wilderness: Yellowstone Fishes and Their World*: "Imagine the



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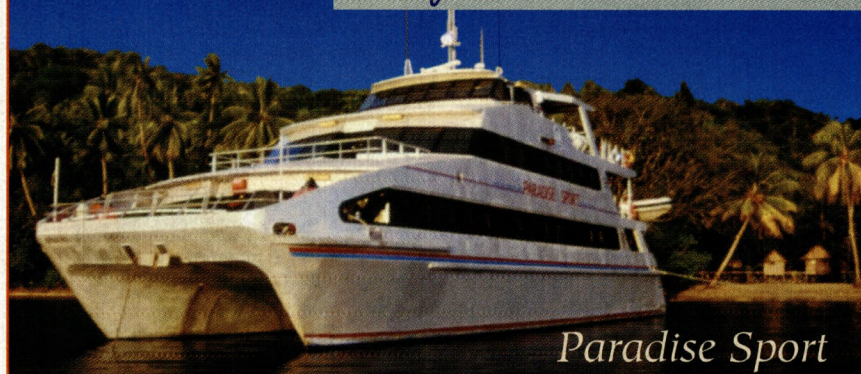
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following: You have no shoulders, neck or chin. Your eyes, nose and mouth are moved to the very top of your head. Your arms become shortened and reform as small fins. Your chest cavity becomes three times as deep as it is wide, and one or more fins sprout along your backbone. Your legs join into one member, and their bones are replaced by a continuation of your backbone, which runs clear to your feet, which reshape themselves into a tail. By now you are uncomfortable standing vertically, so you lean over and slip into something more comfortable—water.”

Already in the water, I now have a choice: either circle around the bottom of the bowl like a visiting hammerhead and exit where I entered, or slip into the main current, which is what I choose to do. I notice it's a little harder for me to keep my balance than it would be if I were a trout, but I ease myself into the gentle rush downstream, a Nantucket sleigh ride, underwater-style. SD

**GET THERE**

**> For more  
information**

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dive sites, turn to In Depth, page  
100, section 4.



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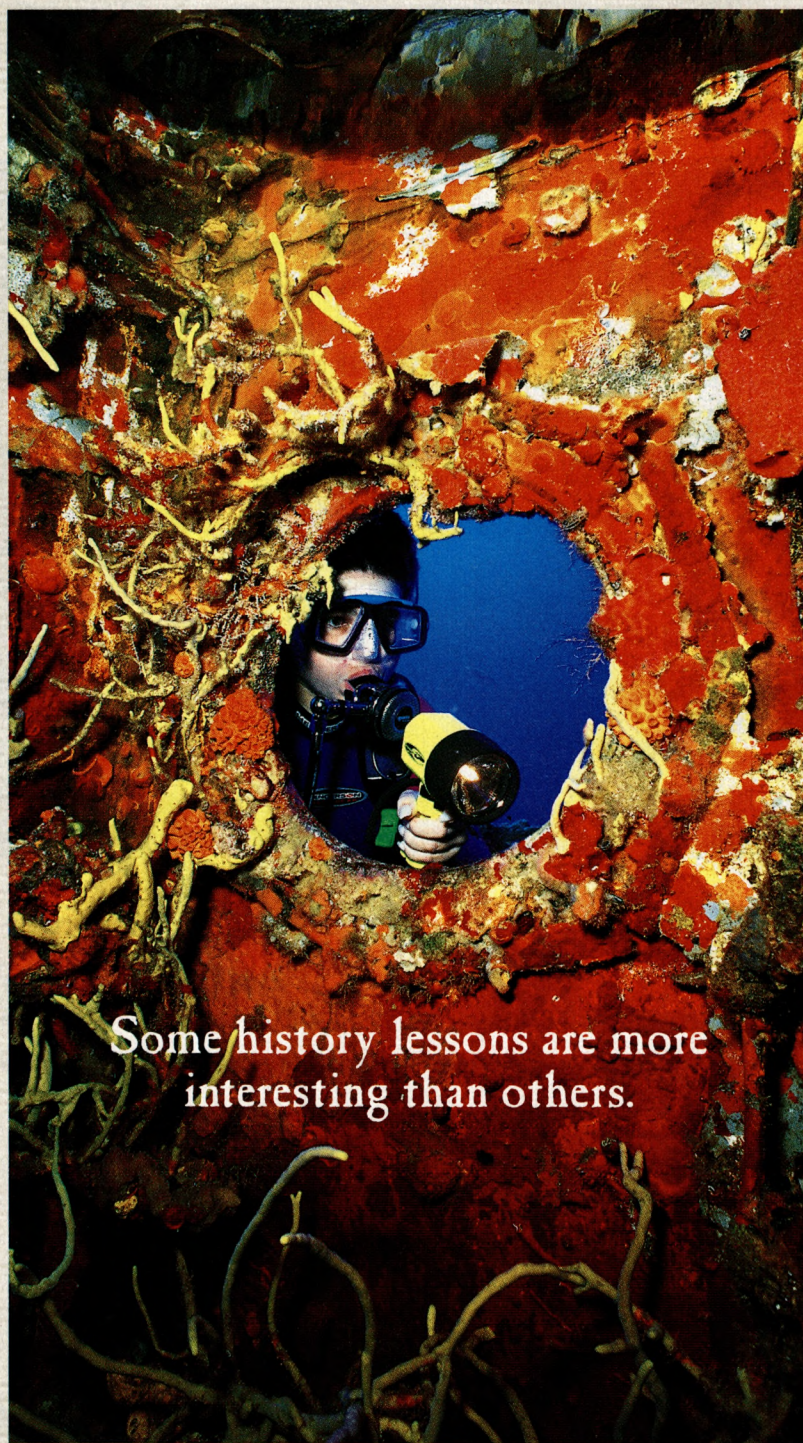


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explore underwater. Problem is, deciding where to start could make you a wreck.

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New experiences at great prices, from joining the crew of an underwater movie in Belize to coral spawning in Curaçao.

## GRAND CAYMAN

### Free Interactive Dive Log

**1 THE DEAL:** As an opening special, Compass Point Condominiums offers round-trip airfare from Miami or Ft. Lauderdale to Grand Cayman, five nights in an oceanfront Compass Point condominium, three two-tank dives and one night dive or one Stingray City dive, and a car rental for the entire stay. Mention *Scuba Diving* to receive one free interactive dive log per booking and to extend the reservation date. Special is available until Dec. 18, 2004, and the price is \$995 p.p., dbl. occ. (800-348-6096, [www.oceanfrontiers.com](http://www.oceanfrontiers.com))

## TOBAGO

### Value You Can Count On

**2 THE DEAL:** Enjoy a seven-night stay, Saturday to Saturday, aboard Peter Hughes' *Wind Dancer* live-aboard in

Tobago. Package includes up to five dives a day, all meals, drinks and alcoholic beverages, airport transfers and more. Prices start as low as \$1,495 p.p., dbl. occ., through Dec. 31, 2004. (800-932-6237, [www.peterhughes.com](http://www.peterhughes.com))

## DOMINICA

### Free Night and Breakfast

**3 THE DEAL:** Book a six-night dive package with Fort Young Hotel and get a seventh night and breakfast free. Package includes accommodations, five days of two-tank boat dives, marine park fees, breakfast, welcome cocktail and airport transfers. The price starts at \$789 p.p., dbl. occ., until Jan. 14, 2005. Add on dinner for \$231 p.p. (866-389-6864, [www.fortyounghotel.com](http://www.fortyounghotel.com))

## ANDROS, BAHAMAS

### Free PADI Adventure Course

**4 THE DEAL:** Small Hope Bay Lodge offers open-water divers a chance to enhance their skills this summer with a free PADI Adventure Diver course. Students who complete any three adventure dives

Stay at Compass Point and dive Grand Cayman's East End for \$995.



and the course work get free instruction after paying for registration and materials. This special offer must be prebooked and lasts through Sept. 7, 2004. There is a minimum four-night stay required. (800-223-6961, [www.smallhope.com](http://www.smallhope.com))

## GRAND CAYMAN

### Free Room with Group

**5 THE DEAL:** Book eight packages with Sunshine Suites and get two dive packages and an extra hotel room free. Package includes four nights' accommodations with full kitchen and three days' diving with Treasure Island Divers. There's one two-tank boat dive per day, breakfast buffet, welcome drink and locked gear storage. With each dive package get one free afternoon dive. Price is \$479 until Dec. 2004, but you must mention sales code "hot" to get this rate. Upgrade to seven nights, six days of diving for \$889. (800-872-7552, [www.sunshinesuites.com](http://www.sunshinesuites.com))

## BELIZE

### Dive a Movie Set

**6 THE DEAL:** Participate in a Howard Hall Productions expedition to produce a high-definition video motion pic-

## CORAL SPAWNING WEEK

FOR ONE WEEK, Sept. 18-25, 2004, the Curaçao Sea Aquarium ([www.curacao-sea-aquarium.com/csw](http://www.curacao-sea-aquarium.com/csw)) hosts Coral Spawning Week with guided shore diving at least twice daily, night diving to watch the corals spawn, and an animal encounter dive where guests can hand-feed turtles and sharks. Kids enjoy their own hands-on program where they encounter dolphins and other marine animals. For an additional cost visitors can swim with, train and feed Sea Aquarium's dolphins. Coral Spawning Week can be booked separately or as an all-inclusive package with Sea Aquarium Resort or Lion's Dive and Beach Resort.



ture about the coral reefs of Belize with IMAX filmmakers Howard and Michele Hall. Part of the production plan is to dive the barrier reef aboard the *Belize Aggressor III* live-aboard during its trips Aug. 21-28, Aug. 28-Sept. 4, and Sept. 4-11, 2004. The seven-day charter is \$2,095 p.p. (800-348-2628, [belize@aggressor.com](mailto:belize@aggressor.com))

BONAIRE

## Unlimited Mileage and Diving

**7 THE DEAL:** This package is a great combo for the shore diving capital of the world, including seven nights' accommodations at Port Bonaire in an air-conditioned two-bedroom ocean-view

apartment with full kitchen and washing machine, six days of unlimited shore diving with Toucan Diving, and a double-cab pickup truck with unlimited mileage. Single- and two-tank boat options are available upon request. Price is \$529 p.p., quad. occ., tax included, and valid through Dec. 17, 2004. (800-766-6016, [www.plazavillas.com](http://www.plazavillas.com))

DOMINICA

## Summer Special

**8 THE DEAL:** Nature Island Dive's summer special includes seven nights' accommodations, 10 dives, unlimited sea kayaking, use of mountain bikes and round-trip airport transfers. Price is \$738 p.p., dbl. occ., and the offer is valid July to Oct. 31, 2004. (767-449-8181, [www.natureislanddive.com](http://www.natureislanddive.com))

GRAND CAYMAN

## Summer Camp

**9 THE DEAL:** Camp Sunset, an educational, entertaining summer camp for kids ages 4-12, is slotted during the Cayman Summer Splash event and includes two swimming lessons, drama, sports and games, arts and crafts, snorkeling, cooking, kayaking and sailing, submarine sailing trips and more. Activities are 8 a.m. to 5:30 p.m. Price is \$450 per child for July and August 2004. (800-854-4767, [www.sunsethouse.com](http://www.sunsethouse.com))

GRAND CAYMAN

## The Madness Continues

**10 THE DEAL:** For the 13th year in a row, Bob Soto's Reef Divers offers a special to coincide with the Cayman Madness event, Sept. 2 through Oct. 14, 2004. Cayman Madness features parties, an underwater treasure hunt, luau, Tortuga rum punch party, Caribbean night, beach barbecue lunch and more than \$50,000 in prizes. The package price includes hotel accommodations, airfare from Ft. Lauderdale or Miami on Cayman

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Airways, lots of diving, hotel taxes and service charges, parties and a Cayman Madness T-shirt. There are four different hotels to choose from, along with discounted rates on jeep or car rentals. Special packages are also available for snorkelers and nondivers. Prices start at \$1,149 p.p., dbl. occ. (800-262-7686, [www.bobsotosreefdivers.com](http://www.bobsotosreefdivers.com), [www.caymanmadness.ky](http://www.caymanmadness.ky))

#### OUT ISLANDS, BAHAMAS

### \$100 Special Savings

**11 THE DEAL:** Blackbeard's Cruises offers seven days of diving, up to 17 dives, accommodations on its live-aboard, all meals, beverages, and tanks and weights. Mention *Scuba Diving* for \$100 off the rate of \$839 p.p., dbl. occ., valid for Nov. 27 and Dec. 4, 11 and 18, 2004, and \$849 for January 2005 departures. Port tax and gratuity not included. (800-327-9600, [www.blackbeard-cruises.com](http://www.blackbeard-cruises.com))

#### KEY WEST, FLORIDA KEYS

### Two-Day Adventure

**12 THE DEAL:** The Key West Diving Society offers two nights' accommodations at Marriott's gulf-side Fairfield Inn, two dive trips with two tanks each, tanks and weights, and breakfast for \$191 p.p., dbl. occ. The package is valid through Dec. 15, 2004. Mention *Scuba Diving* to receive half off shirts and hats. (866-KWDIVER, [www.keywestdivingsociety.com](http://www.keywestdivingsociety.com))

#### BAHAMAS

### \$200 Off Cruises

**13 THE DEAL:** Nekton Diving Cruises is taking \$200 off three packages that include seven nights aboard the *Nekton Pilot*, six days' diving, tanks and weights, meals and ground transfers. Ft. Lauderdale departures. Dates are July 3 and 17, 2004, for \$1,695, and Sept. 11, 2004, for \$1,495. ([www.nektoncruises.com](http://www.nektoncruises.com))

#### DOMINICA

### Group Special

**14 THE DEAL:** Spend eight days, seven nights at the Castle Comfort Lodge with its summer dive special. Groups of 10 divers receive one free package and groups of 20 get two packages free. Package includes accommo-

tions, five days of two-tank morning boat dives, unlimited shore dives, tanks, weights, divemaster, kayaks, breakfast, airport transfers, service charges and hotel tax. Rates start at \$699 p.p., dbl. occ., until Oct. 31, 2004. Add on a dinner package for \$181 p.p. (888-414-7626, [www.castlecomfortdivelodge.com](http://www.castlecomfortdivelodge.com)) **SD**

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- SA-100R Arm
- TTL Sync Cord
- DP-60 Dome Port



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The DS125 Substrobe with 100° coverage (with diffuser) and TTL compatibility is the perfect choice for this camera and lens.

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# Q1 OF 2004 Class

BY JOHN BRUMM

15 newcomers battle for bragging rights  
as the best breathers of the year.

**BUYING A REGULATOR IS A LOT LIKE BUYING A CAR.** Both are big-ticket items where performance is key, but you've also got a wide range of prices, features and comfort options to sort through when deciding which one is right for you.

If you're buying a car, you can test drive as many different models as you like and consult numerous sources for objective performance data like acceleration and braking distance. Regs are a different story. It's virtually impossible for the average diver to take all the new models for a swim, and there is only one source for truly objective performance data on how well a reg delivers air in a variety of situations.

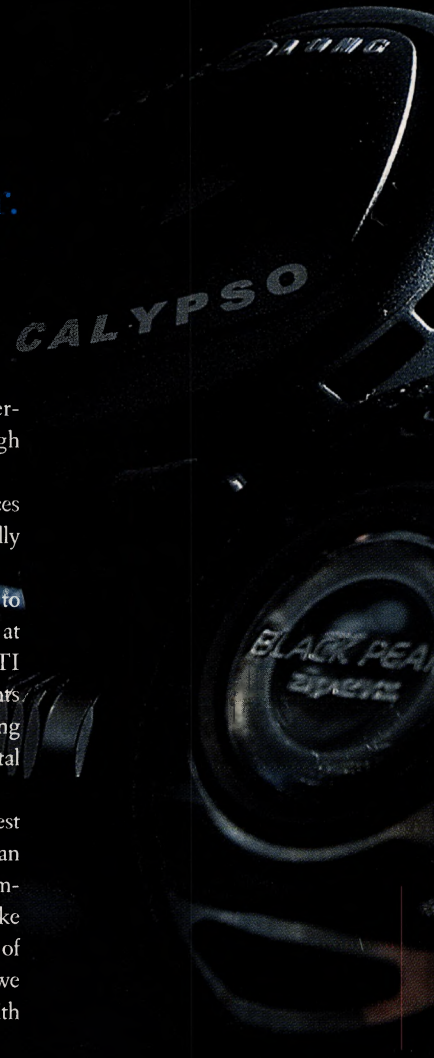
You're looking at it. Each year, ScubaLab evaluates the latest regulator models with one goal in mind—empowering you to make an informed, confident buying decision.

## Putting the Lab in ScubaLab

**AS WITH ALL OUR** past reg reviews (available at no cost at [www.scubadiving.com](http://www.scubadiving.com)), we first put these 15 new models on an ANSTI breathing simulator to measure the work of breathing. Our tests

simulate everything from an easy swim at 132 feet to a panicked air-sharing situation to a hard swim at 198 feet. Thanks to the accuracy of the ANSTI machine, we gathered more than 1,000 data points on these regs and more than 150 pages of breathing loops, a graphic representation of a regulator's total inhalation and exhalation performance.

Then we assembled our team of experienced test divers and spent two days diving these regs in ocean conditions. Each diver rated each reg in six ergonomic categories ranging from the most important (like ease of breathing) to moderately important (ease of purging) to convenience items (comfort). Here we collected 800-plus ergonomic data points, along with 90 waterproof pages of test diver comments.







## A User's Guide

**THE RATINGS AND REVIEWS** that follow are based on the combined results of both the simulator and the ergonomic tests. We've summarized our findings here in the text and broken out all the data in the charts on pages 98 and 99. There you'll find the results from each test broken down into scores of 1 to 5. Whenever you see the words **Excellent**, **Very Good**, **Good**, **Fair** or **Poor** in bold, those comments correspond to specific scores in the charts: Excellent=5; Very Good=4; Good=3; Fair=2; and Poor=1.

## The Reviews

**PAST SCUBALAB REVIEWS** divided regulators into three basic price categories: Under \$300, \$300 to \$400, and Over \$400. With fewer new regs available for review this year, we adjusted the price categories to Under \$500 and Over \$500. Regs are presented in their respective categories in the order of their performance and 2004 Testers' Choice ratings are for the top regs within their price range.



## 2004 Testers' Choices

These three budget breathers earned more simulator points, and more ergo points, than their price-class competitors, rivaling even regulators costing twice as much. All earned **Very Good** ratings for ease of breathing in the swimming position, dryness and clearing. With-in this year's Testers' Choice grouping, the Calypso II holds a slight edge over the Mares models for comfort.

### AQUA LUNG CALYPSO II

> SIMULATOR SCORES: 19 out of a possible 20. > ERGO SCORES: 53 out of a possible 70.

Aqua Lung calls its new Calypso II an entry-level regulator, but this updated version of an old favorite is so much more. This reg handled the breathing machine with a near-perfect score, then racked up the highest total ergo score in its price class. In the water, the Calypso II proved to be a very dry, very easy breather. The lightweight second stage produced very little bubble interference, and earned a **Very Good** rating for comfort, due in part to its Comfobite mouthpiece. A pliable polyurethane cover makes it very easy to manually purge. The dive/pre-dive switch is easy to find and use, even when wearing gloves, and is marked more clearly than most.

But the good stuff doesn't stop there. The Calypso II's second stage can be disassembled without tools, and the first-stage parts inventory has been streamlined to simplify servicing. In short, this is a whole lot of reg for not a lot of money. On top

of a limited lifetime warranty, Aqua Lung offers a free parts replacement program to original owners.

### MARES MR12/AXIS PRO

> SIMULATOR SCORES: 19 out of a possible 20. > ERGO SCORES: 50 out of a possible 70.

### MARES R2/AXIS PRO

> SIMULATOR SCORES: 18 out of a possible 20. > ERGO SCORES: 50 out of a possible 70.

These two regs may be easy on the wallet, but they're anything but stingy when it comes to performance. Both turned in **Very Good** to **Excellent** work of breathing numbers on the simulator. Test divers rated them **Very Good** breathers in the swimming position and very dry in all positions. The simple center-button purge was rated **Very Good** by test divers for being easy to find and use.

The regulators share the same second stage, which is free of user controls and uses a mesh grid faceplate to minimize free-flow when swimming into strong currents. The differences between the regs lie in their first stages. The MR12 is a balanced diaphragm, the R2 an unbalanced piston. Both are equipped with Dynamic Flow Control, which is a priority low-pressure port for the primary second stage. According to Mares, this cuts down on inter-stage pressure drops during inhalation, reducing inhalation resistance. Although the regs performed virtually identically in the water, the R2 earned better comments from test divers for ease of breathing in the heads-down position. The regs we tested are not designed to be used with nitrox,

but according to Mares, there are nitrox versions available.

## Good Performers

These are simple workhorse regs delivering respectable simulator performance, **Good** in-water marks for all-position breathing, and **Good to Very Good** marks for dryness and bubble interference.

### SHERWOOD SCUBA BRUT & MAGNUM

> SIMULATOR SCORES: 13 out of a possible 20. > ERGO SCORES: 48 out of a possible 70.

The Brut and Magnum represent the economy end of Sherwood Scuba's redesigned stable of workhorse regulators. The new line is built around a keep-it-simple philosophy, using compact, oblong second stages and piston first stages sporting a unique dry air-bleed system. This patented design increases durability, says Sherwood, while stabilizing output pressure and resisting the effects of freezing. The Brut's unbalanced first stage is the most basic version of this design. The Magnum's balanced first stage offers an additional high-pressure port. Both offer primary low-pressure ports to optimize flow to the second stage.

Both regs delivered **Very Good** simulator scores at the breathing rate that most closely represents recreational diving, and **Good** performance in the more aggressive tests. In the water, the regs are **Good** breathers in all positions. They also earned a **Very Good** rating for dryness in the swimming

position and a **Good** for dryness in alternate positions. However, test divers' comments indicate that the Brut tends to free-flow a little in the heads-down position.

Test divers liked the lightweight second stages, rating them **Very Good** for comfort. Bubble interference was also rated **Very Good** when fitted with the extended exhaust tee (standard) and **Good** with the narrow exhaust tee (optional). Purging by blowing through the mouthpiece was easy and efficient, but a stiff purge cover made manually purging the regs a bit difficult.

### SHERWOOD SCUBA OASIS & BLIZZARD

> SIMULATOR SCORES: 13 out of a possible 20. > ERGO SCORES: 46 out of a possible 70.

Another example of workhorse regs from Sherwood, the Oasis and Blizzard are virtual twins but with specific, namesake features. To prevent dry mouth, the Oasis offers two moisture-retention fins in its second stage. The Blizzard, designed for cold water, has the same fins, but they're coated with Teflon to prevent icing. There's also a heat sink to prevent freeze-up and second-stage free-flow. In both regs, the balanced first stage incorporates Sherwood's dry air-bleed system, and offers two primary-flow low-pressure ports to boost outlet pressure to both primary and octopus second stages.

Like their less-expensive cousins, the Oasis and Blizzard delivered **Good to Very Good** simulator performance, and were **Good** all-position breathers in the water. They remained very dry in the swimming position, while rated **Fair** for dryness in the heads-down position (averaging a **Good** overall rating for dryness). When it came to clearing using

*Continued on page 57*



# Under the Sea



SHERWOOD  
Oasis



SHERWOOD  
Blizzard



SHERWOOD  
Magnum



SHERWOOD  
Brut



MARES  
R2/Axis Pro



MARES  
MR12/Axis Pro



AQUA LUNG  
Calypso II



NOT EXCEED 510 PSI (35 BAR) - HIGHER PS



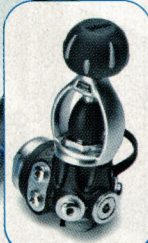
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MARES  
V32/Proton Ice



MARES  
V16/Proton Metal



ZEAGLE  
Flathead XP/ZX



APEKS  
Black Pearl



ZEAGLE  
Flathead VI/ZX



SCUBAPRO  
MK25/X650







A

Continued from page 54

the blowing method, the regs provided a very easy, forceful purge. The purge covers allowed for stiff but effective manual purging.

Test divers liked the lightweight second stages. "It's almost like it's not even there," commented one diver. However, the rather large Wisdom mouthpiece that comes standard on these models garnered mixed results: Half the test divers loved it, half didn't. All Sherwood regulators come with a free two-year replacement parts warranty, including hoses, mouthpieces, exhaust valves and diaphragms.

## 2004 Testers' Choices

The all-around top performers in this year's reg go-round, these three breathers delivered **Very Good to Excellent** simulator scores. They also earned **Very Good** marks in the most important ergo categories, with Scubapro's MK25/X650 stepping ahead with an **Excellent** for ease of breathing and Apeks' Black Pearl with an **Excellent** for ease of clearing.

### SCUBAPRO MK25/X650

> SIMULATOR SCORES: 20 out of a possible 20. > ERGO SCORES: 57 out of a possible 70.

Scubapro's MK25 balanced piston first stage, coupled with the new X650 balanced second stage, was this year's top performer, earning a perfect simulator score for the lowest work of breathing across the test board and the highest total score for ergonomic performance.

It's the only reg test divers rated **Excellent** for ease of breathing in the swimming position, and it got **Very Good** scores just about everywhere else.

Test divers liked the first stage's low-pressure port swivel turret, which greatly simplifies hose routing. The dive/pre-dive switch is clearly marked, so you can tell at a glance which position you're in. It's also easy to use when wearing gloves. The same goes for the breathing resistance knob.

The MK25/X650 earned an overall **Very Good** rating for clearing, especially using the blowing method. However, test divers considered the purge cover to be excessively stiff, making it difficult to activate the manual purge. But this was the only drawback they found on a very sweet reg.

### ZEAGLE FLATHEAD VI/ZX

> SIMULATOR SCORES: 20 out of a possible 20. > ERGO SCORES: 55 out of a possible 70.

Hot on Scubapro's heels, Zeagle's flagship Flathead VI/ZX has a redesigned, environmentally dry-sealed first stage with "enhanced internal porting" and a new side-ducted cover on its ZX balanced second stage to better channel water. According to Zeagle, these refinements are intended to improve flow efficiency and smooth the delivery of air. Based on our test results, they hit the bull's-eye. In our lab tests, the reg turned in a perfect simulator score—**Excellent** across the board—and in the water divers rated it **Very Good** for ease of breathing in all positions. The reg also breathes very dry and stays that way, thanks to a very efficient purge system.

Test divers found both the

resistance adjustment knob and the dive/pre-dive lever effective and easy to use, but the minuscule markings on the lever make it hard to tell what position you're in. Test divers reported the second stage was lightweight and comfortable, but men and women were split on the mouthpiece. Men liked it; women found it a bit too large.

### APEKS BLACK PEARL

> SIMULATOR SCORES: 18 out of a possible 20. > ERGO SCORES: 56 out of a possible 70.

Apeks' Black Pearl is not only one of this year's top performers, it's arguably the best-looking breather of the bunch. Created to commemorate Apeks' 30th anniversary, the limited-edition Black Pearl's first stage (which is environmentally dry-sealed) features an investment cast brass body embossed with an image of a hard-helmet diver (see photo "A," above). The balanced second stage has an attractive co-molded plastic-over-metal cover with a dome resin purge decal.

Both in the lab and in the water, the reg's performance is as good as its looks. Based on Apeks' ATX200, the Black Pearl delivered **Very Good to Excellent** work of breathing on the simulator. In real-world conditions, test divers rated it a **Very Good** breather in all positions. This reg is dry and very easy to clear—test divers considered the push-button purge the most effective manual purge system in this year's test bed.

The Black Pearl also earned a **Very Good** score for comfort, due in part to its Comfobite mouthpiece. The dive/pre-dive lever is easy to find and use, even when wearing gloves. So too the adjustment knob, which is slotted to make it easier to grasp. In addition

to a limited lifetime warranty, Apeks offers a free parts replacement plan to original owners.

## Very Good Performers

While they didn't collect quite enough points to earn Testers' Choice designations, these three regs are nevertheless ahead-of-the-curve performers. The Zeagle holds a slight edge over the Mares models on the simulator. In the water, all of them were rated **Very Good** for ease of breathing in the swimming position, for dryness in all positions, and for clearing, while the Mares models held the edge on comfort.

### ZEAGLE FLATHEAD XP/ZX

> SIMULATOR SCORES: 19 out of a possible 20. > ERGO SCORES: 52 out of a possible 70.

The newest member of Zeagle's regulator line, the XP uses the same first stage as the Flathead VI, only it's not environmentally dry-sealed. The breathing machine performance of both regs was similar in all RMV/depth categories except the most rigorous, where the XP lagged slightly. So too in the water. While both regs earned **Very Good** scores for ease of breathing in the swimming position and dryness in all positions, the XP lagged behind the Flathead VI in breathing performance in alternate positions. These differences in machine and ergo scores mark the distinction between the Flathead VI's Testers' Choice per-



# More than \$500 *continued*

formance and the XP's **Very Good** performance.

## MARES V16/PROTON METAL

> **SIMULATOR SCORES:** 18 out of a possible 20. > **ERGO SCORES:** 51 out of a possible 70.

If you're into metal, this reg really shines. The Proton Metal combines a highly polished chrome- and nickel-plated brass and stainless steel second stage with a balanced diaphragm V16 first stage via a preferential high-flow low-pressure port. According to Mares, the mesh grid on the face of the compact second stage allows water flow around the second stage diaphragm, minimizing free-flows when swimming into currents.

The Proton Metal is an all-around solid performer. With no user adjustments, the reg delivered **Excellent** to **Very Good** performance on the breathing simulator. In the water, it rated **Very Good** for its ease of breathing in a swimming position, dryness in all positions, ease of clearing and overall comfort.

## MARES V32/PROTON ICE

> **SIMULATOR SCORES:** 17 out of a possible 20. > **ERGO SCORES:** 51 out of a possible 70.

Mares' flagship regulator is also all-metal, with heat retention and humidifying properties built into the compact second stage for cold-water diving. The unit we reviewed last year came from the factory with an improperly installed exhaust tee, so at Mares' request we re-tested it. While simulator scores were identical to last year, in-water tests showed improved results in critical ergo categories.

The reg's ratings for ease of breathing in a swimming position improved to **Very Good**, as did its ratings for dryness. The biggest improvement, of course, was in bubble interference, as test divers upped the score to **Good**. Hooked to a serious-looking V32 first stage via a preferential low-pressure port, the lightweight second stage is streamlined and comfortable and offers a strong purge.

### Good Performers

Both of these regs delivered **Very Good** scores in the simulator test that most closely represents recreational diving. However, the Deep Limit Brass wasn't able to reach beyond that, while the Maximus earned **Good** scores for breathing performance in the more aggressive intermediate test categories before reaching its limitations at our most rigorous RMV/depth level. In spite of this, the Deep Limit Brass remained a favorite among test divers, and the Maximus was rated among the best in minimizing bubble interference.

## OCEAN MASTER DEEP LIMIT BRASS PLUS

> **SIMULATOR SCORES:** 4 out of a possible 20. > **ERGO SCORES:** 54 out of a possible 70.

Testing the Deep Limit Brass was a challenge. The original reg Ocean Master sent us, which was put on the simulator and included in the in-water tests, turned out to be a prototype. Ocean Master sent us a production model to replace

it, but, due to test schedules, we were only able to put this replacement reg on the simulator. However, since the prototype and the production model delivered near-identical work of breathing results on the simulator, we feel safe in assuming that in-water performance would also be identical.

The Deep Limit Brass has a unique twin-piston first-stage design, and a second stage with two 360-degree swivel joints located on the underside of the body rather than on the side. On the simulator, this reg rated **Very Good** at an easy breathing rate at 132 feet. However, the reg exceeded test parameters for work of breathing in every other simulator test.

In the water, the Deep Limit Brass (the prototype) was well-received by test divers. They deemed it a very easy and very dry breather in all positions, but found it a bit noisy. The reg also clears very easily using both purge methods. The reg received an overall **Very Good** rating for comfort, especially among women. One test diver called it "absolutely the most comfortable reg for divers with smaller mouths." However, test divers felt there were too many turns on the adjustment knob, and that dialing it all the way in excessively restricted airflow.

Although they look identical, the 2004 Deep Limit Brass is a substantially better performing regulator than its predecessor, which is also called the Deep Limit and was still available when we began this test. To tell the difference, unscrew the second stage cover and look inside. The air barrel on the 2004 is gray plastic instead of chromed metal (see photo "B," above), and along its left side, up by the mouthpiece, there's a bypass tube. Earlier versions of the reg don't have this tube. The Deep Limit basic version

has a plastic second-stage cover while the Brass Plus has a chrome-plated brass cover.

## SHERWOOD SCUBA MAXIMUS

> **SIMULATOR SCORES:** 10 out of a possible 20. > **ERGO SCORES:** 41 out of a possible 70.

Sherwood's top-line Maximus offers all of the first and second stage features of Sherwood's other regs, plus a little extra. It's the only Sherwood reg with a second-stage resistance adjustment knob and dive/pre-dive switch. It's also fitted with a second-stage swivel and a longer supply hose that allows you to route the hose underneath your right arm rather than over your right shoulder.

The Maximus delivered **Very Good** to **Good** performance on the breathing simulator in the first three breathing machine tests, but it couldn't quite achieve the 198-foot test depth. It came close, but exceeded test parameters at 191 feet. The reg earned respectable in-water scores for ease of breathing in all positions. The standard extended exhaust tee was rated **Very Good** in preventing bubble interference. The Maximus earned only a **Fair** rating for clearing (an average of a **Good** rating for clearing via the blowing method, and a **Poor** rating for the manual purge due to an extremely stiff purge cover). Test divers also found the resistance adjustment knob effective, but rather stiff. They liked the size and shape of the second stage, but were split on the Wisdom mouthpiece in terms of comfort. **SD**

**GET MORE** > For more information on these regulators, turn to In Depth, page 98, section 2.





## Missing in Action

**ALL MAJOR REGULATOR** manufacturers/distributors were invited to participate in this year's new regulator review. Here is a status report of the major manufacturers who are not a part of this year's review:

> **AERIS, DACOR, GENESIS, OCEANIC** and **POSEIDON** did not have any new regulators available or listed in their 2004 catalogs, so they were unable to participate in this year's review.

> **BEUCHAT** and **CRESSI-SUB** did have new (or previously unreviewed) regulators listed in their 2004 catalogs but chose not to participate.

> **SCUBAPRO** didn't respond. It has two new regulators in its 2004 catalog—the MK25/X650 and the MK25SA/S600. The MK25SA/S600 was not yet off the production line at the time of testing, but the MK25/X650 was available. Because Scubapro is a major manufacturer with widespread U.S. distribution, we purchased one from a local dive store to test.

> **ATOMIC AQUATICS** and **TUSA** each have a new reg due to be released in 2004, but production models of Atomic's new Tx2 and Tusa's new RS350 were not available in time for this review. Look for them in future reviews.

> **APOLLO SPORTS** also has a couple of redesigned regulators slated for release in 2004, but they had yet to be released to the American market at the time of testing.

## Workhorse vs. Racehorse

**SOME MANUFACTURERS** design their regs to operate on the ragged edge of positive pressure. This often produces surprisingly low work of breathing on the breathing machine and near effortless breathing performance in the water. But it also tends to make the regs a bit "nervous," and



prone to free-flow at inopportune times. To manage this skittishness, manufacturers often add resistance adjustment knobs to the second stages in order to allow divers to control free-flows and adjust breathing resistance as needed.

Other reg manufacturers direct their attention toward stability and simplicity. These workhorse regs often don't deliver quite as low work of breathing numbers on the simulator (although a human diver may not discern the difference), but they tend to be stable breathers and they don't need user controls. You just put the reg in your mouth and breathe.

Both designs are legitimate and highly successful approaches to regulator design. The one you choose ultimately comes down to whether you're a hands-on or a no-hassle type of diver.

## Regs By the Book

**GENERALLY CONSIDERED** to be the best manual on regulator repair ever written, the new *Regulator Savvy* by Pete Wolfinger breaks down into two sections: the first covers the nuts and bolts of basic regulator function, the second applies this knowledge to the art of adjusting a reg for optimum performance. Together, they represent a rational connection between the know-how and the "know why" of regulator operation. The manual is presented in a three-ring binder with 187 heavy-stock glossy pages and more than 300 easily understandable illustrations. Any diver interested in how his or her regulator works would find this manual interesting, especially the first section. However, it's written for regulator technicians and not for do-it-yourselfers. \$50. Web: [www.scubatools.com](http://www.scubatools.com).

# 2003 Testers' Choices

For comparison, here are last year's top performers and their scores.

### UNDER \$300

**ZEAGLE ENVOY \$299 >**

Simulator Scores: 20 out of a possible 20. > Ergo Scores: 47 out of a possible 70.

### \$300-\$400

**ZEAGLE ENVOY DELUXE**

**\$349 >** Simulator Scores: 20 out of a possible 20. > Ergo Scores: 47 out of a possible 70.

**OCEANIC 02 TECH \$379**

> Simulator Scores: 16 out of a possible 20. > Ergo Scores: 47 out of a possible 70.

**DACOR EAGLE PRO DPD**

**\$399 >** Simulator Scores: 17 out of a possible 20. > Ergo Scores: 45 out of a possible 70.

### OVER \$400

**ATOMIC AQUATICS B2**

**\$699 >** Simulator Scores: 20 out of a possible 20. > Ergo Scores: 57 out of a possible 70.

**APEKS ATX100 \$649 >**

Simulator Scores: 20 out of a possible 20. > Ergo Scores: 56 out of a possible 70.

**APEKS ATX40 \$469 >**

Simulator Scores: 20 out of a possible 20. > Ergo Scores: 53 out of a possible 70.

**POSEIDON XSTREAM DIVE**

**\$655 >** Simulator Scores: 18 out of a possible 20. > Ergo Scores: 47 out of a possible 70.

## Many Thanks

To **Mike Ward** of **Dive Lab**, Panama City Beach, Fla., for his work on the ANSTI breathing simulator; to **George Perez** of **Sea Divers**, Enterprise, Ala., for his technical support during lab tests; and to **Express Divers**, Long Beach, Calif., for dive services during the in-water portion of the tests.

MITCH MANDEL





Yellow tube sponges carpet the ocean floor off the north edge of Soufrière Bay.



TEXT & PHOTOS BY  
MICHAEL LAWRENCE

# Log

D o m i n i c a

**ONE OF THE CARIBBEAN'S** better-kept secrets, Dominica is a sumptuous volcanic island blessed with pristine wilderness both above water and below. Tucked into the Lesser Antilles halfway between Guadeloupe and Martinique, Dominica is terrifically underexplored, a fact that helps keep its singularly breathtaking identity intact. That its many natural resources, from jaw-dropping dive sites to thermally active lakes, are protected by an extensive national park system promises that the island will stay that way.

Under water, Dominica is bordered by coral-encrusted walls that swarm with swirling fish and plummet into the deep blue. Topside, Dominica climbs quickly; at its summit it's a good 5,000 feet above sea level. The island's topography is rugged and angular, with mountains and valleys folding in upon themselves and rivers and waterfalls that divide the land. It is a sublime place to visit for both divers and hikers: A good rule of thumb is two dives in the morning, followed by a leisurely lunch and then a trek into the spectacular hinterland.

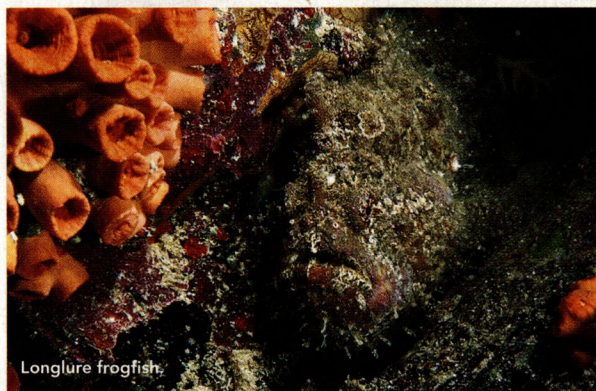
( A VISUAL TOUR  
ABOVE AND BELOW )



**WHILE SEAHORSES, PIPEFISH, FROGFISH** and flying gurnards may be rare elsewhere in the Caribbean, here they are daily fare. Black coral? There are forests of the stuff. Perched atop massive sponges are spindly crinoids, their tentacles extended to filter the nutrient-rich water for their daily meals. Sperm whales have made the deep waters their home, which they share with many species of dolphins. Walls are liberally cloaked with all manner of invertebrate life: Sponges and corals fight for space, while tiny fish seek refuge among them.



The Valley of Desolation features steaming fumaroles, evidence of the molten heart of Dominica.



Longlure frogfish.



Fairy basslet.

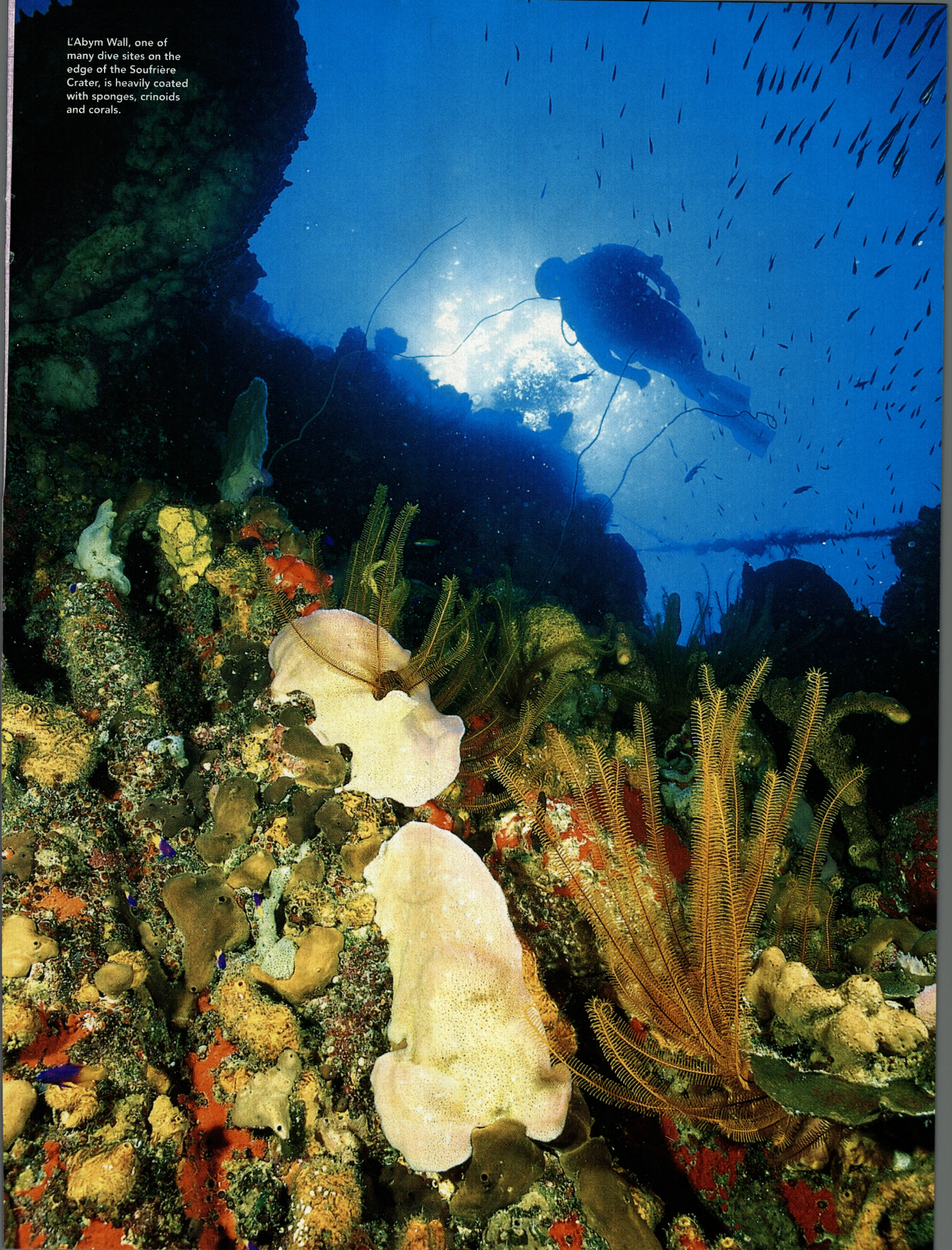


Flying gurnard.

**AT THE SOUTHWESTERN TIP OF THE ISLAND**, a submerged volcanic crater creates Soufrière Bay, which since 1987 has been part of the Scott's Head Soufrière Marine Reserve. Dropping to 600 feet at its center, Soufrière Bay is surrounded by at least a dozen sites—such as Scott's Head Pinnacle, Crater's Edge and L'Abyrn—each different and worth diving. Head north along the west coast and dive the mid-island—at sites such as Lauro Reef, Rodney's Rock and Rena's Hole. To the north are the reefs that surround Portsmouth's Fort Shirley. Farther north, visit the shallow arches of Toucari Caves or, for the adventuresome, dive the northern edge of the island referred to as Point Break.



L'Abyrn Wall, one of many dive sites on the edge of the Soufrière Crater, is heavily coated with sponges, crinoids and corals.

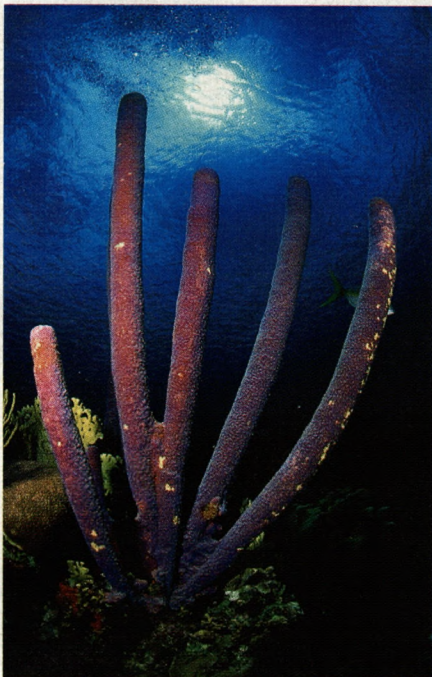






Middleham Falls is nestled in the midst of Dominica's hills, just a 45-minute hike through the rain forest.





**WITH SUPERB DIVING, ABUNDANT MARINE LIFE** both large and small, and the ease of land exploration, Dominica always makes good on its promise to take your breath away. Its hidden corners, filled with the serene natural beauty of cascading falls and sparkling lakes, never disappoint. A relaxed five-minute walk off the Canefield-Castle Bruce road in the foothills of the rain forest will lead you to the shimmering beauty of Emerald Pool. Head northeast through the town of Trafalgar and a 15- to 20-minute stroll will bring you to Trafalgar Falls. Set aside 45 minutes each way for a hike, and the roar of Middleham Falls, Victoria Falls or Sari Sari Falls will welcome you. If you have been doing your daily workout, undertake the seven-mile hike through the Valley of Desolation to the Boiling Lake, the world's second-largest solfatara, a water-filled volcanic crater seething with the dynamic energy of Dominica's molten heart. Your legs will be complaining for days, but you'll never regret it. **SD**

**GET THERE** > For more information about Dominica, turn to In Depth, page 100, section 3.

Above: A stand of purple tube sponges on the sloping reef off Toucari Bay Point. Below: A fleet of local fishing boats rests on the shore of Soufrière Bay.





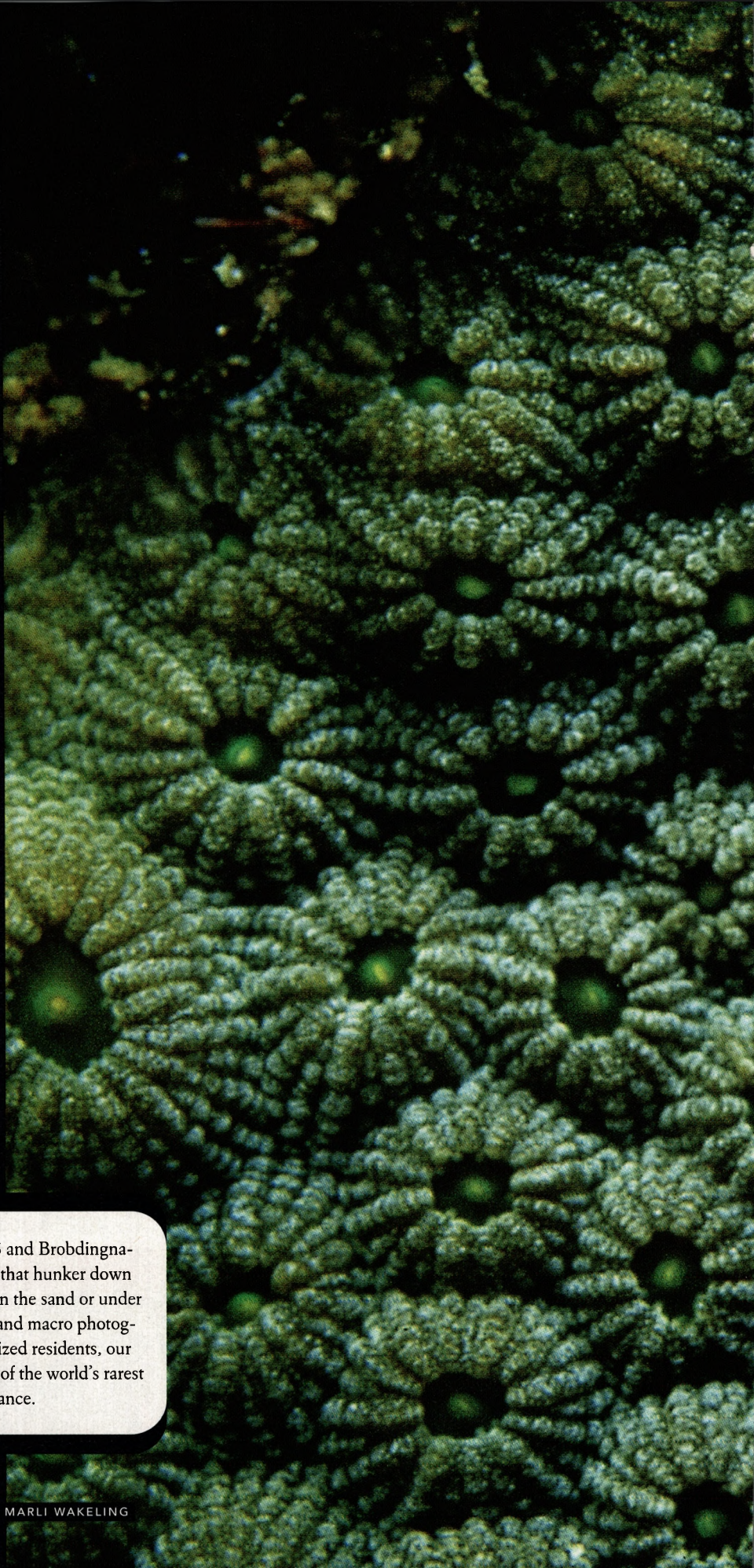
( READER RATINGS )

The  
World's  
Best  
Places  
for

# Small Animals

Our readers name the destinations that pay off big in tiny marine life.

**IT TAKES A DIVER WITH SHARP EYES** and Brobdingnagian patience to find the Lilliputian creatures that hunker down on the reef, hole up in tiny nooks, or burrow in the sand or under the rubble on the seafloor. Luckily for divers and macro photographers who are smitten by the ocean's pint-sized residents, our readers have rated the top places where some of the world's rarest and smallest creatures can be found in abundance.





# 1 St. Vincent & the Grenadines

Some of the most amazing “muck” diving in the world is found in this chain at the southern end of the Caribbean’s Windward Islands. Muck diving is done on a sandy, silty or rubble bottom in shallow water, often in low visibility. Off St. Vincent, in the shallow, sandy areas between the island’s headlands and the sponge-covered gentle slopes offshore, spotted spoon-nose eels are found day or night, tiny octopuses and box crabs bury themselves so completely that only their beady eyes are visible, and minuscule white pea crabs hide under bottom-grazing red heart urchins. At the north end of Bequia Island’s Admiralty Bay, peek into the hollowed boulders and fissured rocks at sites like Devil’s Table to find fingernail-sized crabs and blennies.

( TIE )

# 1 Papua New Guinea

If St. Vincent and the Grenadines is making a name for itself among serious muck divers, then Papua New Guinea is already in the Muck Diving Hall of Fame. Making a living in the debris—leaf litter, branches, logs and even tin cans and bottles—on the seafloor in Milne Bay are splashy flamboyant cuttlefish, stargazers with their eerie, mask-like faces, wildly ornamented decorator crabs and banded cleaner shrimp, nicknamed boxer shrimp for their long claws and arms. In the seagrass are creatures that resemble stuff you’d yank out of a garden, like weedy scorpi-onfish and ghost pipefish. The coral rubble and rotting tree

If you want to capture some of the Grenadines’ most photogenic characters, like this secretary blenny, you’ll need sharp eyes and a macro lens.



logs off Dinah's Beach is prime real estate for pygmy lionfish, nudibranchs, crabs and cockatoo waspfish.

( SCORE: 96.3 )

**3. British Columbia, Canada** A surprising number of small and hardy animals find the inhospitably cold water and ripping tidal currents of the northwest Pacific perfectly cozy. Brilliant orange, purple, yellow and red sea stars, giant barnacles and encrusting sponges carpet the bottom of current-swept Sechart Rapids, north of Vancouver Island. Sechart's waters support suspension feeders, too, like dahlia sea anemones. At the north end of Vancouver Island, in Queen Charlotte Strait, is the submerged pinnacle Hunt Rock, where a dense thicket of wiry tree kelp is home to clusters of pink, orange and lavender brooding anemones. Race Rocks, the rugged islets off the southern tip of Vancouver Island, support shallow forests of bull kelp, where juvenile rockfishes and grazing sea urchins shelter.

( SCORE: 95.8 )

**4. Washington State** The Washington locals who regularly dive their Northwest Pacific backyard will not be surprised to find the Evergreen State on this list. The San Juan Islands, where the Georgia and Juan de Fuca straits converge, is home to terraced walls of metridium anemones and rocky reefs, perfect for feather stars and abalone. Point Whitney in Hood Canal, the picturesque fjord that separates most of Puget Sound from the Olympic Peninsula, has an abundance of anemones and sea cucumbers. In Puget Sound's Edmonds Underwater Park, kelp and decorator crabs, and tubesnout can be found in the eelgrass.

( SCORE: 91.7 )

**5. Egyptian Red Sea** Point a finger nearly anywhere on a map of the Red Sea and you'll find a pristine dive site with massive numbers of reef fish. In and around the underwater gullies known as *wadis* are pencil and sea urchins, sea anemones, Spanish dancer nudibranchs, the deep red and blue-spotted Hurghada star and thorny sea-horses that look like miniature dragons. The coral meadows off the southern tip of the Sinai Peninsula are home to huge populations of tiny, jewel-like basslets.

( SCORE: 90.5 )

**6. Bonaire** Often referred to as the shore-diving capital of the world, Bonaire has another richly deserved moniker: macro capital of the world. Bonaire and seahorses are practically synonymous in the div-

Emperor shrimp and a porcelain crab hitch a ride on a sea cucumber in Papua New Guinea.

1



3

A juvenile brooding anemone on a greenmark hermit crab serves as camouflage.

4

Red sea urchins—found off the coast of Washington—use their spines as stilts to move across the seafloor.



6

Look for lettuce sea slugs on Bonaire's rubble bottoms, where they graze on algae.

A crinoid shrimp blends in perfectly with the colors of its host.

ing lexicon, but despite the island's reputation for sheltering a significant population of the *Hippocampus* family, the tiny sea-horses are difficult to spot. Look for them hugging searods and pier pilings. You'll also have to look hard to find black and white-spotted smooth trunkfish and longlure frogfish.

( SCORE: 88.9 )

**7 Thailand** Macro divers come to the Andaman Sea's Similan Islands and Mergui Archipelago to find exotic, striking and rare creatures. Around the Similans' Richelieu Rock are some of the planet's most fascinating small creatures—tiger-tail seahorses, ghost pipefish, mantis shrimp and cuttlefish are in abundance here. In the Mergui Archipelago, at sites like Three Islets, are rare nudibranchs like the rabbit ear, along with harlequin shrimp.

( SCORE: 88 )

**8 Palau, Micronesia** The skittish and diminutive mandarinfish is the Holy Grail for many macro photographers, who come to this archipelago for the chance to capture one on film. The strikingly colored mandarinfish is also high on the wish list of many divers who are not underwater shutterbugs. Your best chance of seeing these shy creatures is on a night dive; mandarinfish venture out after the sun goes down in order to mate. Especially popular among divers is the chain's 23-mile-long pale blue lagoon with its ancient coral reefs and gumdrop-green Rock Islands.

( SCORE: 87 )

**9 Truk (Chuuk), Micronesia** Wreck diving aficionados come to dive Truk's shallow lagoon, the site of a fierce battle during World War II, Operation Hailstorm, when the U.S. military sank more than 60 Japanese vessels and planes. These wrecks have become living reefs patrolled by a navy of a different kind: platoons of reef fish—tiny angels, fairy basslets, tangs, lionfish, clownfish, triggerfish, goldflake, flame, lemonpeel and freckled frogfish—swirl around the coral-encrusted structures.

( SCORE: 85.2 )

**10 Yap, Micronesia** The destination of choice for divers who want up-close encounters with mantas, Yap is also home to a diverse macro ecosystem on its barrier reef, thick with reef fish that are rare elsewhere. Playful clownfish—there are five species in Yap—are hosted by large anemones at sites like Lionfish Wall, and clouds of anthias, lionfish and unicornfish on Magic Kingdom's gentle slope give this site its whimsical appearance. **SD**







# LESSONS FOR

# Life

by Michael Ange

( DIVE ACCIDENTS, CLOSE CALLS  
& HOW YOU CAN AVOID THEM )

FILE :

73  
#

(THIS IS A TRUE STORY,  
BUT THE NAMES HAVE  
BEEN CHANGED.)

## BOAT VS. DIVER

*A captain's quick thinking saves the day when two divers lose control of a shallow river drift dive.*

**DARLA GLANCED AT TAMMY WITH TERROR** in her eyes as the sound of the prop came closer. They were trapped between the large boat that had suddenly rounded the bend and the sand of the shallow river bottom. They struggled to escape the approaching hull and spinning prop, but barely had time to react before the boat's shadow blotted out the bright morning sun. As she tried to kick for the bottom, Tammy turned to see Darla struggling near the surface with excess buoyancy. A second later, Tammy heard the dull thud of her tank hitting the boat hull even before she felt the impact of the metal pontoon.



## THE DIVERS

Tammy and Darla were both active divers in their mid-20s. Both had been certified less than a year, but they had made several dive trips, racking up more than 30 dives since their initial certification. Always eager to dive, they signed up to drift-dive Florida's popular Rainbow River.

## THE DIVE

The plan was for the group to enter the river and drift back to the boat ramp. The divers would have about two hours of bottom time to explore the river channel, which ranged from just a few feet to as deep as 25 feet.

The dive plan was simple. The divers would exit the boat in waist-deep water and the boat crew would hand their gear down. The divers would suit up while standing on the sandy bottom.

Once all the divers were suited and had checked their equipment, they were to form a tight group following a divemaster who would tow a surface float holding the red-and-white diver down flag. A diver positioned at the end of the group would tow a second flag. Before the divers submerged, the boat captain and the dive leader explained again the importance of remaining close to one of the dive flags.

The divers descended as a group and began their drift down the river. Staying close to the bottom, Darla and Tammy quickly became engrossed in searching the stands of aquatic plants for unique marine life. They soon lost all track of their position relative to the dive group.

## THE ACCIDENT

The dive leaders and the rest of the group drifted slowly down the river,

allowing the current to do most of the work. Excited by their finds, Darla and Tammy quickly swam from site to site along the river, outpacing and moving far ahead of their dive group. As they turned a sharp bend in the river, they found themselves in water only a few feet deep and moved very close to the surface in order to avoid dragging along the bottom.

As they swam through the river's restriction, the sound of a motor alerted them to their impending collision with a large pontoon boat.

On the surface, the boat captain was providing his passengers with the usual river tour as he watched closely for dive flags. As he approached the bend, he slowed his vessel, but, seeing no flags, he accelerated against the current and moved upriver. The glaring morning sun

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Photo by: Solomon Baksh

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cast a harsh reflection on the surface of the river, making it difficult for the captain to see anything below the surface until the boat was directly over it. Fortunately, Darla's fins broke the surface, alerting the captain to their presence.

The captain immediately shut down his outboard motor, then tilted it to pull the spinning prop free of the water just as the port-side pontoon struck Tammy's cylinder.

Unable to dive deep enough to avoid the collision, both Tammy and Darla slammed into the pontoon several times before getting away from the still-moving boat. When the boat had finally passed over them, they surfaced scared, but suffering only minor bumps, bruises and cuts.

### ANALYSIS

Even dive environments that appear

safest have numerous hazards. In this case, the greatest hazard is the possibility of colliding with the many canoes, kayaks and pontoon boats that navigate this popular recreational river.

The swift current and the very shallow water in certain areas of the river make it difficult for divers to avoid boats, even if they spot them. Both state law and common sense required these divers to remain close to the dive flags and surface markers being towed by the group leader and his assistant.

In spite of their injuries, Tammy and Darla were extraordinarily lucky. Had the captain not been attentive and had he not acted so quickly, the boat probably would have powered directly over the divers causing serious, maybe even life-threatening, injuries. The fast action of the captain very likely saved their lives. **SD**

### LESSONS FOR LIFE

**1 PAY ATTENTION.** We've said it a thousand times and we'll say it a thousand more: Listen to dive briefings, pay attention to the information and follow the directions provided.

**2 FOLLOW THE FLOAT.** When diving in navigable waterways, use the required surface marker devices to indicate divers are down, and stay at least as close as the law requires to those markers. Closer is better.

**3 STAY ALERT.** No matter how enthralling the underwater world, divers must be aware of their surroundings and alert for potential hazards.

**4 COMPLACENCY KILLS.** Even supposedly easy dives can lead to serious injuries if you don't observe the required safety rules and remain alert to the surroundings.

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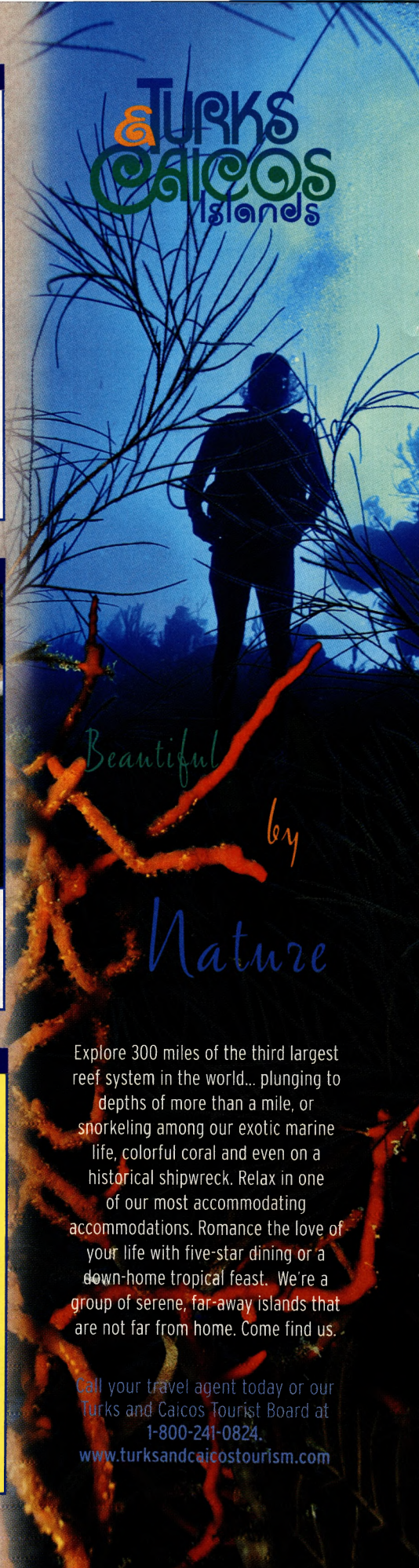
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# Gear



Easy to stow and inflate, a good safety sausage is your best insurance against being stranded at sea.

## SURFACE SIGNALS

### Get Noticed

You're here. The boat's way over there. Bridge the gap with these signaling devices, or face a long swim home. **BY JOHN FRANCIS**

#### IF YOU DIVE LONG

enough, it's bound to happen. You will, somewhere, somehow, surface to find yourself a long, lonely distance from the boat, which ignores your whistle, shows its tail and heads for home. In that crucial moment you'll want something to signal the crew with, something that clearly expresses your sense of urgency—like a heat-seeking missile. Less confrontational, and easier to find in a dive shop, are these attention-demanding safety sausages.

Inflate one of these high-visibility tubes and wave it overhead, and your odds of being seen improve dramatically. Add a piercing blast from an air horn (see "Bring in the Noise," pg. 78) and you're as good as back on board. Of course, you're not going to make a habit of this losing-the-boat-business, so you also want your safety sausage to stow easily.

#### SURFACE SIGNALS REVIEWED

**Aqua Lung SOS** The Surface Observation Signal (SOS) is the simplest sausage to deploy. You attach it to your BC's right rear dump valve and when trouble strikes, there's no searching for it, unclipping it, unrolling it and huff-puffing into it. You just



## SURFACE SIGNALS

pull the ripcord and—pop!—the SOS springs to attention using air from your full BC bladder. Credit the hands-free idea to underwater photographer Stephen Frink, who tends to surface with both of his hands full of cameras.

The earliest models required you to keep your BC fully inflated to avoid limp sausage syndrome, but earlier this year Aqua Lung redesigned the SOS with a one-way valve that keeps the sausage standing tall even after you deflate your BC. Look for the "Now with one-way check valve!" starburst on the packaging to be sure you're getting the latest model. The SOS fits all current



Aqua Lung SOS; deployed (left).

Aqua Lung and SeaQuest and many Technisub BCs with rear exhaust valves. It can be retrofitted to most older SeaQuest BCs and some Aqua Lung BCs that have the rear valve; check with your dealer. **DIMENSIONS (diameter x length) DEPLOYED:** 3 inches x 53 inches. **ROLLED UP:** 2.5 inches x 6 inches. **PRICE:** \$74.95 for models with the check valve; \$69.95 for the original. **WEB:** Aqua Lung, [www.aqualung.com](http://www.aqualung.com).

**Akona Safety Tube** When fully inflated, the Akona Safety Tube is about

the diameter of a salami but a little over three feet long. It comes in a bright, almost iridescent safety yellow and inflates in one or two deep breaths when you blow into a small inflation tube. The inflation tube has a valve you can close so it stays inflated when you take the tube out of your mouth. You open the inflation valve by pulling out the end of it, and close it by pushing the end in against your teeth.

The instructions suggest you clip the Safety Tube to your BC using the large grommet at one end. That will keep it from floating away, but won't make it stand up. If you need to get the boat's attention, you're better off holding and waving it. Deflated and packed in its mesh bag with a drawstring, it's the smallest sausage of those tested and an easy fit into a BC pocket. Or hang it from your BC with the clip attached to the bag. **DIMENSIONS (diameter x length)**

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CE





Akona Safety Tube;  
deployed (inset left).

**DEPLOYED:** 2.7 inches x 40 inches.  
**ROLLED UP:** 2 inches x 5 inches. **PRICE:**  
\$24. **WEB:** Akona Adventure Gear,  
[www.akona.com](http://www.akona.com).

**Marine Sports COM 2 ME** The COM 2 ME is a little skinnier than the Akona sausage but four inches longer. It is also orally inflated and as easy to blow up. The valve, however, is a little easier to use in that you push it against your teeth to open it, and a

spring closes it automatically when you pull it away. That doesn't seem like much, but you're glad of it when you've got other things on your mind.

To scramble a metaphor, this sausage has all the bells and whistles. The tube comes in bright orange or yellow. A clear plastic sleeve near the top will hold a chemical light stick or one of those tiny electric marker lights of the same size. When deflated and rolled up, the COM 2 ME is a little larger than the Akona, but a Velcro strap keeps it neat, and a plastic clip lets you hang it on your BC.

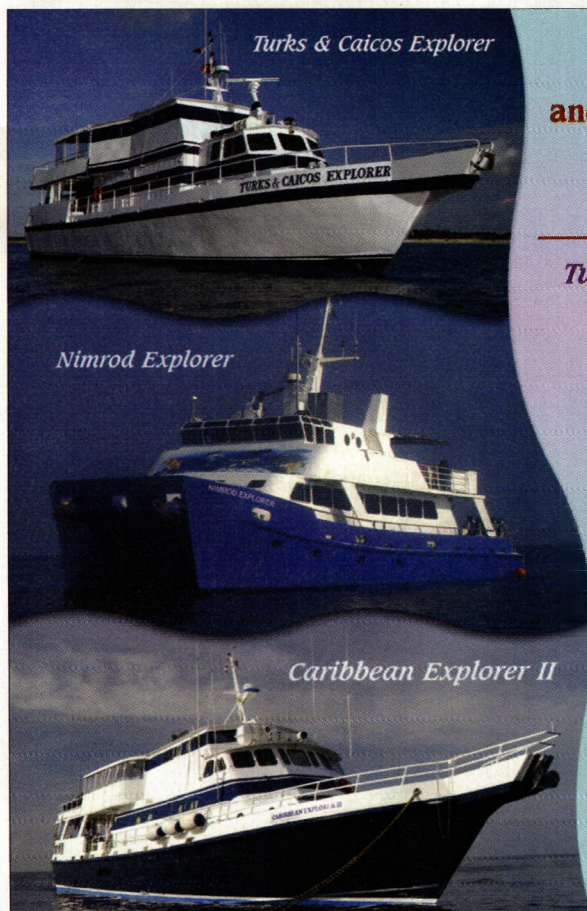
#### DIMENSIONS

(diameter x length)

**DEPLOYED:** 2.2 inches x

44 inches. **ROLLED UP:** 2.1 inches x 5 inches. **PRICE:**  
\$25. **WEB:** Marine Sports Products, [www.marine-sportsdiveproducts.com](http://www.marine-sportsdiveproducts.com).

Marine Sports  
COM 2 ME;  
deployed  
(inset right).



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## Ocean Reef Compact Safety Marker

This sausage is like a lift bag in that it's open at the lower end and has no inflation tube. Instead, you put your octo in or just under the opening and push the purge button. As long as the lower end is under the water's surface the air will stay inside. The Ocean Reef has a pair of soft lead plates sewn into the mouth of the tube so it will float mouth-down. The plates also close the mouth of the tube somewhat, though they don't seal it.

There are two problems with this type of sausage. One is that you can't get much pressure into it, so the top end tends to flop over. Also, you can't lift the sausage out of the water to wave it or you'll deflate the tube.

The Ocean Reef sausage has a dive flag sewn to the upper end, which will make it more noticeable if the wind blows in the right direction. No cocktail weenie, the Com-

pact Safety Marker is the fattest sausage of the bunch when inflated, but also the bulkiest package when deflated and rolled up.

**DIMENSIONS** (diameter x length)

**DEPLOYED:** 3.8 inches x 41 inches.

**ROLLED UP:** 2.2 inches x 6.5 inches.

**PRICE:** \$34. **WEB:** Ocean Reef,

[www.oceanreefgroup.com](http://www.oceanreefgroup.com). **SD**



Ocean Reef Compact Safety Marker; deployed (inset top right).



## BRING IN THE NOISE: THE DIVE-ALERT HORN

IF YOU REALLY WANT TO get noticed on the surface, you can't beat the one-two punch of a safety sausage and a horn that can wake the dead. We first tested the *Dive-Alert* in 1997 and several times since, and it still has no equal. It's as loud as the freon-powered thing drunks always seem to have at baseball games—so loud, in fact, that you should put your ears under water before sounding it.

You plug the *Dive-Alert* inline between your BC's power-inflate hose and the inflator valve, and it operates on compressed air from your tank. The device is small, and its button is easy to find right next to your BC inflate/deflate controls. And as long as your first stage can put out intermediate pressure in the 150-psi range, you can generate 132 decibels of attention-getting noise. Price: \$50. From: *Ideations Design*, [www.divealert.com](http://www.divealert.com).



JOSEPH BYRD (DIVE-ALERT HORN)

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# Training

YOUR BODY

## Bye-Bye Back Pain

A regimen of stretching and exercise can keep back pain from ruining your next dive vacation.

Eight exercises designed to get your back in shape for diving. **BY SELENE YEAGER**

**B**EFORE YOUR next dive, take a moment to educate yourself about the bends. No, not decompression illness. We mean the dozen or so bends you'll do between the beach and the boat, hauling gear, slinging cylinders and otherwise wreaking havoc on that support system called your spine. The American Academy of Orthopaedic Surgeons says



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## YOUR BODY

four out of five Americans will suffer a bout of back pain at least once in our lives. And sources say aching backs top the complaint list of divers around the globe.

"Everywhere I dive, I hear people complaining that their backs hurt," says physical rehabilitation specialist Mary Ann Everhart-McDonald, M.D., of Columbus, Ohio. "The reason is partly because divers often don't do much physical preparation to get fit to dive, and partly because of improper lifting technique and poor posture during the dive itself," she says.

### Strong to the Core

**SCUBA DIVING USES** every muscle from those in your regulator-gripping mandibles to the ones in your flippered, finning metatarsals. The girder that supports everything

in between is your core—the abdominal, oblique (side torso) and back muscles. This central framework transfers power from your upper body to your lower body and supports you as you lift, walk, climb and swim. Unfortunately, in too many cases, this essential stabilizing structure is also our weakest link.

To bolster this support system, physical therapists recommend what they call "lumbar stabilization," or "core training" exercises. These moves target your torso from your shoulders to your hips, especially the ab, oblique and back muscles. When performing these exercises, be sure to keep a neutral spine. You shouldn't arch, sway or deliberately try to flatten your back. Rather, maintain a natural spinal curve that is comfortable. Perform two sets of the following exercises, two to three days a week, but not on consecutive days.

## WATCH YOUR BACK

To keep the chiropractor at bay, use these techniques when lifting and carrying heavy gear.

- **Cradle the load.** Carry equipment as close to your body as possible. Instead of trying to strong-arm your tank with one hand, lift it with both hands and carry it across your chest in both arms like a baby.
- **Lift with your legs.** Bend from your legs and pick things up using your strong quad, hamstring and glute muscles. Don't bend from the waist and hoist things with your back.
- **Wear the weight.** The easiest, and safest, way to carry your tank, BC and weight belt is wearing them.
- **Integrate it.** If your buoyancy check shows you need lots of weight, consider a BC with integrated weights to disperse the load.
- **Buddy up.** Rather than using the sling-and-struggle method to don your BC, ask your buddy to hold it, so you can put both arms in and settle it before bearing the load. If your buddy is unavailable, place the tank on a bench for support.
- **Undress in the drink.** If you're susceptible to back woes, take your gear off in the water and hand it up to someone on the boat before reboarding.



THOMAS-BRADLEY ILLUSTRATION & DESIGN



**THE HOVER.** Lie facedown on the floor with your upper body propped on your forearms with your elbows directly beneath your shoulders. Your torso should be up off the floor so your body is in a straight line, supported by your forearms and toes. Your back should not arch or droop. Hold 10 to 20 seconds.

**SIDE PLANK.** Lie facedown on the floor with your upper body propped on your forearms with your elbows directly beneath your shoulders (as in the hover). Roll your body over to the right side, supporting your torso on your right forearm and raising your hips and stacking your feet so your body forms a straight plank. Put your left hand on your hip. Hold five to 10 seconds. Then switch sides.

**ROLL LIKE A BALL.** Sit on the floor and hug your knees to your chest. Balance on your tailbone and lift your feet, pointing your toes down toward the floor. Pull your abdominal muscles in and roll back onto your upper glutes and lower back. Contract your abs and pull yourself back to start. If the move is too difficult, loosen your arms, so your knees are pulled less tightly to your body. Perform 10 rolls.

**LYING LEG DROP.** Lie on your back with your hands behind your head and your legs extended and lifted directly over your hips so they are perpendicular to the floor. Turn feet out slightly. Lift your head off the floor and look toward your legs. Inhale and lower your legs toward the floor about six inches. Exhale, and return to start. Start with four reps, and then work up to eight.

**TORSO LIFT.** Lie facedown on the floor with your hands under

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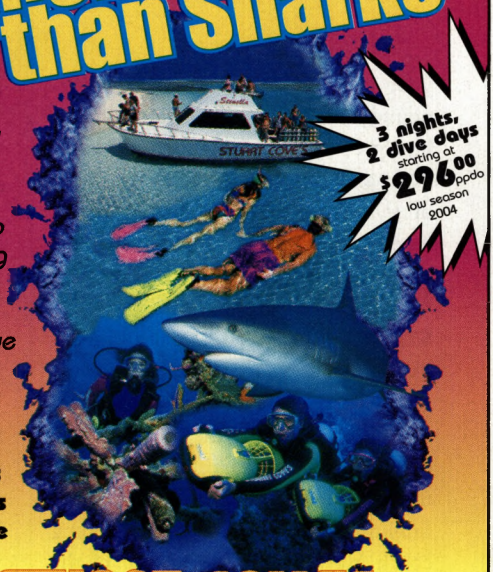
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your chin, palms down, and elbows pointed out to the sides. Keeping your hips pressed to the floor, lift your head, chest and arms about five to six inches off the floor. Pause, then lower. Repeat for eight to 10 reps.

## Loosen Up

**STRENGTH WITHOUT** flexibility is like chips without the fish—only half the story. For pain-free diving, concentrate not just on stretching the usual suspects like the hamstrings and calves, but also the muscles that need to be flexible for finning, advises sports conditioning coach Harvey Newton, creator of the book and video set *Explosive Lifting for Sports* (Human Kinetics, 2002). "People automatically flex forward, as in touching their toes, when they stretch. But scuba diving puts you in the reverse

position, with your feet floating up, so your body forms a U in the opposite direction," he says. "If you're not conditioned for that, you can end up pretty sore by the end of your dive." The following stretches will help. Perform each stretch twice, holding for 30 seconds. You can perform these every day.

**COBRA.** Lie facedown with your feet together, toes pointed and your hands on the floor, palms down, just in front of your shoulders. Lift your chin and gently extend your arms, lifting your upper body off the floor as far as comfortably possible. If you feel any strain in your back, alter the pose so that you keep your elbows bent and forearms on the floor. This move targets the thigh, front hip and abdominal muscles.

**FIGURE 4 BEND.** Sit in a chair with your legs bent 90 degrees and feet

flat on the floor. Cross your right ankle over your left knee, so your calf is parallel to the floor and your right knee is pointing to the right. Keeping your back straight, lean forward from the hips until you feel a stretch deep in your right glute muscle. This move stretches the piriformis, a small muscle that runs from the base of the spine and connects to the thighbone.

**LUNGE STRETCH.** Get in the lunge position, with your right leg bent 90 degrees in front of you and your left leg extended behind you with the knee resting on the floor. Your torso should be upright. Keeping your back straight, press your body forward so you feel a stretch in the front of your hip. Hold; then repeat on the opposite side. This stretches the psoas, the muscle that connects your back with the front of your hip. **SD**

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## SEA BATHER'S ERUPTION

**Q:** What should I do when I get a case of sea bather's eruption?

**A:** Sea bather's eruption, popularly but incorrectly known as "sea lice," can occur when the larvae of jellyfish come in contact with skin. Common signs include intensely itchy skin eruptions with small blisters and elevated areas of skin. Found primarily on body parts covered by swimwear, these lesions may also appear on the armpits, neck, arms and legs.

The primary offenders in Florida and Caribbean waters are the larvae of the thimble jellyfish, *Linuche unguiculata*. These larvae, generally half a millimeter long, can find their way into bathing suits and become trapped against the skin, where they sting. The larvae become nearly invisible in the water. The best method of identifying when the larvae are about is simply by the appearance of the rash on swimmers or divers.

The larvae are most prevalent in the months of April through July. Symptoms usually appear within 24 hours after exposure to the organism and persist for several days. Symptoms may include fever, chills, headaches, nausea and vomiting.

Often the symptoms are very mild, and other causes may be considered or diagnosed incorrectly at first. Many cases of sea bather's eruption clear spontaneously, but others require treatment.

You can prevent sea bather's eruption by wearing a full wet-suit or impermeable dive skin. Snorkelers wearing T-shirts and women wearing one-piece bathing suits are vulnerable because the fabric can trap the stinging larvae against the skin.

After diving or swimming in an area where jellyfish larvae are present, remove your wetsuit, dive skin or bathing suit before showering, because fresh water may discharge the nematocysts trapped in the fabric. There have been reports of the condition recurring when the same bathing suit is worn again, suggesting that the larvae may remain in clothing.

**DAN Dive Safety and Medical Information Line**, (919) 684-2948; **DAN 24-Hour Diving Emergency Hotline**, (919) 684-4DAN (collect); or (919) 684-8111; **web:** [www.DiversAlertNetwork.org](http://www.DiversAlertNetwork.org).



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# Tech Gear Simplified

In advanced diving, it's all about the equipment and how you use it. **BY MICHAEL ANGE**

**SCUBA IS** a gear-intensive sport, and technical diving pursuits like deep diving, mixed-gas diving, cave and wreck penetration demand even more gear. To most recreational divers, the thought of strapping on four tanks with as many regulators, the Medusa-like tangle of hoses, gauges, redundant computers and the rest, looks like an intimidating mess. But in reality, a technical dive rig is an exercise in minimalism and efficiency.

## Tanks and Valves

**AT THE HEART OF** every technical gear package are the primary breathing gas cylinders. Tech divers typically wear twin back-mounted cylinders connected by an isolation manifold. The manifold allows two independent regulators to be attached to the system—one just above each tank. A crossbar between the two tank valves allows either regulator to access air from both cylinders unless the isolation valve located in the center of the bar is closed.

While this configuration allows a diver to carry more breathing gas, its greatest value is in allowing him to shut down either tank valve in case of regulator failure or a problem with the tank valve. If the left regulator fails and begins leaking gas, for example, the diver can turn off the left tank valve while still breathing air from both cylinders via the reg mounted to the right tank.

If the problem is with the tank valve itself, a blown burst disk for example, the

diver simply closes the isolation valve on the crossbar, saving at least one-half of his remaining gas supply. In this situation, he would continue to breathe from the leaking tank until its supply was exhausted before switching regulators and using the gas from the other cylinder.

For deep or long duration dives, tech divers typically use large-capacity cylinders (usually 95 to 120 cubic feet), though smaller cylinders may be used in twin configurations when the dive does not require large gas volumes. Tech divers generally prefer steel cylinders that remain neutral to slightly negatively buoyant as they are emptied. The lower service pressure of steel cylinders also makes it easier to blend custom gas mixes by partial pressure. Finally, tech divers prefer DIN valves over yoke valves. DIN connections are a more secure method of attaching the regulator to the tank and provide up to 50 percent greater gas flow—an important consideration on deep dives where ambient pressure causes breathing gas to become quite dense.

## Regulators

**THE REGULATORS USED** by most technical divers are no different from those used by serious recreational divers. Any high-performance model will do, so long as it can be modified to accept a DIN valve attachment. The big difference between a tech diver's regulator setup and yours has to do with positioning and hose routing.

In a typical configuration, the diver's primary regulator's first stage is connected directly to the tank valve; the second stage is connected to the first stage with a seven-foot low-pressure hose. This hose is routed behind the diver's head, under the right arm (usually tucked under a strap or behind a light canister), across the chest, around the back of the neck and into the diver's mouth. In an air-sharing emergency, the diver removes the second stage from his mouth and with a simple flick of the thumb he can unloop the hose and deploy the entire length of the long hose to a buddy.

His alternate reg is connected to the right post by a standard-length hose routed over the right arm, and the second stage is secured to an elastic necklace (sometimes referred to as a suicide strap) positioned just below the diver's chin. If necessary, the diver can grab the alternate

## WHAT ABOUT THOSE EXTRA CYLINDERS?

**ON LONGER DURATION DIVES** and dives requiring staged decompression stops, the technical diver may carry two, three or more gas mixtures. Each additional gas mixture requires a separate tank, regulator and rigging system. A mixed-gas diver going to **250 feet**, for example, would likely use trimix in his primary cylinders, a second tank with "travel gas" (**usually 32 percent nitrox**) for descents and ascents in the **100-foot** range, and a third cylinder of **100 percent oxygen** for shallow decompression stops.

Typically, the travel gas is hung under the left arm and attached to the BC's shoulder strap and waist strap by a harness and sliding bolt snaps. The deco gas would be similarly hung underneath the right arm. This configuration allows the diver to balance the weight and readily access each tank's valve since they will usually be in the off position until the gas is required.



regulator without using his hands.

The primary BC inflator and a submersible pressure gauge are connected to the right side first stage. If needed, a secondary BC inflator hose is connected to the left first stage. This configuration allows the diver to crisscross the hoses or turn them down toward the shoulders so that the hoses are streamlined and protected.

Positioning the primary regulator on the left side is also a safety precaution when diving in overhead environments. A clockwise rotation of the hand wheel on either tank valve will shut off the corresponding regulator. As the diver wears twin cylinders, the top of the left post valve closes as the knob rotates away from the diver while the right valve closes as it rotates toward the diver. When swimming forward in an overhead environment, accidental contact with the ceiling can cause the left valve to close or "roll off." If the diver's primary regulator is connected to the left post, he will immediately detect the problem and correct it. If the left side is used as the alternate, however, the diver might not detect the problem until he is attempting to donate air to a buddy.

Tech divers require a single submersible pressure gauge because the tanks are used with the isolation valve open and the pressure in the cylinders will equalize with every breath. In the event that the regulator with the pressure gauge must be shut down, the diver will no longer be able to read his tank pressure. However, if he's following proper gas-management procedures, the diver should have enough of an air reserve to abort the dive safely. For this reason, most tech divers will

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forgo the added clutter of a second pressure gauge.

## BCs

**NATURALLY, ALL THIS** equipment requires a sturdy, well-constructed harness. The most popular technical BCs consist of a simple stainless steel or alu-

minum backplate attached to the diver with a wide canvas strap system that goes over each shoulder and around the diver's waist. The BC bladder, commonly called wings, is then sandwiched between the tanks and the backplate when those two pieces are bolted together. When inflated, this type of bladder pushes neatly against

the twin cylinders and provides stable flotation without any side or front clutter.

A technical BC must carry enough sturdy, stainless steel D-rings capable of supporting heavy items such as stage bottles. However, it is also important that the strap configurations on the tech diver's BC offer a clean, uncluttered configuration. Heavy battery packs are worn on a waist harness strap.

## Computers

**THE COMPLEXITY** of most dive profiles mandates that divers carry two dive computers, each with extreme readability, reliability and features that match the dive profile. At a minimum, these computers should be capable of full decompression dive profiling and adjusting to nitrox mixtures up to 50 percent oxygen. For decompression dives, many tech divers prefer computers that will allow one or more gas switches as they move from bottom gas to decompression gas.


## Accessories

**TRADITIONAL DIVE LIGHTS** are not bright enough to be used on most technical dives. Cave lights, consisting of a remote battery pack and a compact light head connected by a long cable, are preferred.


Another typical accessory is the reel. Most technical divers use a cave-style reel containing a thin, braided line (#18 to #36 in size) that resists abrasion yet spools compactly.

Finally, every tech diver will carry at least two well-maintained cutting instruments. Divers in ocean environments typically choose wire cutters or paramedic shears to deal with wire fishing leaders. Cave divers may choose instead to use a Z knife, a small hook-shaped device concealing a sharp razor blade that is effective for cutting small line. Additionally, most divers will choose a blunt-tip diver's tool with both straight and serrated cutting edges for their second cutting instrument. SD

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# Make the Familiar Fascinating

Change your approach to create remarkable images in unremarkable circumstances. **TEXT & PHOTOGRAPHY BY STEPHEN FRINK**

**L**IKE MOST underwater photographers, I visit some dive sites over and over again. Though I know practically every sea fan on several of my favorite sites off my hometown of Key Largo, Fla., I never get tired of shooting there. Even the most familiar coral reef has potential for unusual photo ops, assuming the shooter's eye and gear bag are up to the task. Here are a few tips to add creative vision to your home turf.

## Try a New Lens

**YOUR FAVORITE REEF** might be different, but if I had to choose one style of photography most productive for my hometown reefs, it would be fish photography. There are plenty of angelfish, barracuda, schooling grunts, eels and butterflyfish, thanks to a long tradition of marine conservation here in the Keys. This makes the "normal" lens the go-to optic for most photographers along these reefs. A 35mm on a Nikonos V or MotorMarine II, a 60mm lens on a housed SLR, or even the standard lens in a housed digital is right for fish portraits and small reef vignettes. Normal lenses simulate the field of view of the

human eye, but the reef is packed with subjects both large and small. Even modern zoom lenses can't do it all, so creative vision is often enhanced with some new additions to the camera kit.

## Think Small: Shoot Macro

**SIMPLY ADDING MACRO** capability will open a world of new possibilities on the reef. With some camera systems, that means relegating yourself to shooting only macro for that dive, as is the case with a Nikonos extension tube set. Other cameras may offer lens choices that integrate macro capability while retaining the possibility for fish photography.

The ever-popular 60mm and 105mm Micro Nikkors offer 1:1 macro (full life-size) at minimum focus, but of course can photograph larger subjects as well.



Many of the prosumer digitals focus very close, generally to within a few inches, but there are supplementary optics that can be added under water to enhance the close-up capability, allowing macro imaging. Ikelite, Sea & Sea, Pioneer and Light & Motion all have bayonet mount systems on their housing ports so an external magnifying lens can be added. For those using housed SLRs, both Nexus ([www.nexusamerica.com](http://www.nexusamerica.com)) and Backscatter ([www.backscatter.com](http://www.backscatter.com)) have wet diopters than can be affixed to the macro port to bring magnifications even greater than 1:1 for super-macro.

Macro photography is such a powerful tool that virtually all camera systems offer some relatively inexpensive means to facilitate this option. Whatever tool brings macro capability to your system, you'll have to change your normal tech-



One of the hardest parts of macro photography is locating the tiny subjects.

niques for both image capture and subject selection drastically. Instead of scanning the horizon for the next fish to photograph, successful macro shooters immerse themselves in the nearby min-

tae. The best macro photographers swim slowly and examine each square meter of reef to find subjects. They study the behavior of the small creatures that inhabit the reef and patiently approach their subject, hoping to get close enough to fill the frame with a creature the size of a peanut. The techniques of macro photography are relatively simple and require harmony of aperture and strobe power relative to distance. The far more challenging aspect is finding the creatures, and that is all about selective vision and an awareness of the subject's habits and habitats.

## Think Big: Shoot Wide

AT THE OTHER EXTREME, the wide-angle lens also opens up new vistas. Obviously, it offers the opportunity

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to shoot large marine life, diver portraits and sweeping views of the reef itself. But the best wide-angle images will have a clearly defined central subject that may be highlighted by creative application of the strobe, or perhaps by the forced perspective of proximity. Rarely will a wide monochromatic view of the reef hold much interest.

Howard Hall's classic *Guide to Successful Underwater Photography* is inspirational in this regard and suggests a variety of ways to approach wide-angle photography creatively:

**SILHOUETTE:** Shooting an upward view with a bold central subject can add diversity to your portfolio. Use available light to silhouette. The ball of sun can make a strong compositional element, and of course this technique can be combined with a foreground illu-

minated by strobe. Likewise, you can use available light alone to illustrate large subjects like a shipwreck or marine life in shallow water. While macro or fish photography may be all about strobe power, TTL and f-stop, the ambient light level is far more important in these kinds of shots.

**DIVER PORTRAITS:** Incorporating divers in a wide-angle shot provides a sense of scale and creates "reliability." Viewers understand that if the diver in the photograph was there in that beautiful place, having that wonderful experience, they could be there too. Communication and cooperation with your dive model beforehand is preferable (and far more productive) to trying to capture a random diver fly-by.

**LARGE MARINE LIFE:** The key to photographing big animals is to place

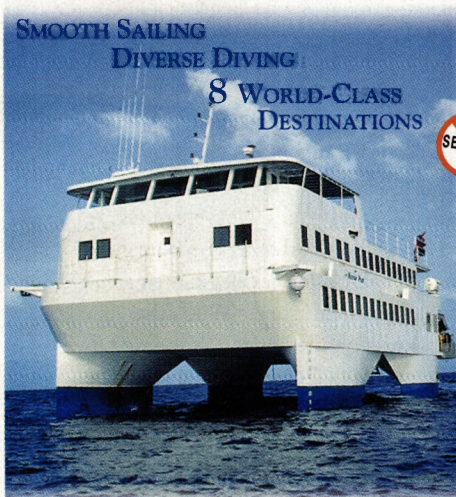
yourself where the creatures are likely to be. If you want to photograph humpbacks in the wild, plan a trip to the Silver Banks of the Dominican Republic in February or March. If you want white sharks, try Guadalupe in October or November. For spotted dolphins, try White Sand Ridge off West End Grand Bahama in the summer. There are enough divers traveling the world to know with some level of reliability where the big creatures are likely to be and when. It can happen on more familiar reefs, but that's likely to be lucky happenstance. With any luck you'll have the right lens, proximity and a shot or two left in your camera when it happens.

**CLOSE-FOCUS WIDE-ANGLE:** As Hall writes, close-focus wide-angle photography combines "the beautifully rich colors of a macro shot combined

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## PHOTOGRAPHY



with the expansiveness of wide-angle available light and silhouette photography." Getting close to a subject with wide-angle also changes the perspective dramatically. A medium-sized turtle in the foreground can appear dramatic and gigantic with a diver in the background to provide size reference. A cluster of foreground soft coral artfully illuminated with strobe can dominate a wide-angle scenic. Even a lowly sea fan, one you've swum past a hundred times before, can be a powerful element of composition using the close-focus wide-angle technique.

### Try a New Time of Day

**WE MOST OFTEN DIVE** the reef at mid-day because it is most convenient for dive boat schedules. But it may not be the most dramatic time of day. In the early morning and late afternoon, the coral reef is changing guard. New creatures are prowling, and others become more accessible as they begin their somnambulant state. With the sun lower on the horizon, it is easier to get the ball of sun in position to be a compositional element in the photograph.

Of course, for something entirely different, try night diving. Once the sun sets, the same coral reef, the one you've visited a hundred times before, will offer a whole new world, rich with unique photo opportunities.

SD



# Dive Insurance 101

In an overseas emergency, your dive insurance could save your life. **BY JOHN FRANCIS**

**D**ECOMPRESSION illness hits like lightning: it's rare but serious, especially if you don't get prompt treatment. Dive insurance is often sold as protection from the financial hit of an accident, which can be steep. One chamber ride typically costs between \$5,000 and \$10,000, and several treatments are often needed.

But when you're far away from home, hurting and worried, a more important benefit may be the emergency phone number on the back of your card. If your policy includes travel assistance services, that number rings into an alarm center, where doctors, EMTs and nurses will answer 24/7/365. They make a preliminary medical evaluation, direct you to the closest doctor or recompression chamber, then call ahead and make sure you're admitted.

And if you're having a really bad day and need emergency evacuation? "Usually, within a couple of hours we can have anyone evacuated from just about any location," says Tracy Camarata, director of client services at AssistAmerica.

These potentially lifesaving services are provided by a number of travel assistance companies, among them Assist America, International SOS, AIG Assist, MEDEX and MedAire.

Policies offered by the Divers Alert Network (DAN) differ slightly in that the diving emergency phone number on your card connects directly to DAN's dive-specific medical staff, also on-call around the clock and calendar. The DAN staff

performs the initial assessment and connects you to local care. The handoff to the traveler's assistance company, MedAire in DAN's case, happens afterward if evacuation or other help is needed. The number for nondiving emergencies, direct to MedAire, is also on the card.

## THE FINE PRINT

**ACCESS TO RESCUE** and coordination services is part of many dive insurance policies—but not all—and not all are the same. Read the fine print when comparing policies. Other key features to consider include:

**Coverage and Benefit Limits:** Look for a generous benefit for emergency evacuation (you'll need to pay for that chopper ride) and hyperbaric chamber treatments. The maximum amount covered varies considerably by plan, from \$15,000 to \$500,000 per incident.

**Exclusions:** Some evacuation benefits kick in only if you are more than a certain distance from home, usually 50 or 100 miles, for example.

**Depth and Gas Limits:** Some plans will not cover divers who purposely exceed preset depth limits or use breathing gases other than air.

**Additional Coverages:** Some policies reimburse for related expenses like vacation cancellation costs, transportation for family members, etc. Individually these costs are minor compared to the big ones, but in a worst-case scenario (the kind you buy insurance for in the first place) they can add up. Some premium policies even add coverage for nondiving illnesses and accidents—worthwhile, you may think if you've tried to cross the street in, say, Cozumel.

## WILL THAT BE CASH OR CHARGE?

### DIVE INSURANCE POLICIES

are what's called coinsurance, meaning they're designed to reimburse you after the fact for covered expenses. That means you usually have to pay the hospital or chamber yourself, seek reimbursement from your primary health insurer (if you have one), and then from the dive insurer. To avoid any potential delay in treatment or evacuation, you should have a roomy credit card at your disposal.

Some travel assistance companies like AssistAmerica will guarantee payment for at least your admission and emergency treatment. DiveAssure claims to be the only insurer that regularly pays the provider directly and seeks reimbursement from your primary health insurer later. Others, DAN for one, will also do so on a case-by-case emergency basis, but they aren't obligated to under their policies. As always, read that fine print.

**Premiums:** The annual premiums for comprehensive dive insurance policies are pretty reasonable—\$54 to \$99—so the real challenge is getting the most bang for the buck.

**One final note:** As you can see from the chart, Diver's Security has an unusual, roll-your-own approach that allows you to combine four plans, each covering a different type of injury or expense. No traveler's assistance benefit is included with any class, and unlike the other policies, you must have primary health insurance in order to qualify.

*Charts begin on page 92*



# FOR YOUR INFORMATION

PROVIDER	PLAN	COST	COVERS	LIMIT	DOESN'T COVER	DEPTH OR GAS LIMITS	OTHER COVERAGE (LIMITS)	COMMENTS
<b>Divers Alert Network (DAN)</b> (800) 446-2671 <a href="http://www.diversalertnetwork.org">www.diversalertnetwork.org</a>	Standard	\$54 (\$25 premium, plus \$29 DAN membership)	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$45,000 lifetime	Nondiving accidents; evacuations less than 50 miles from home	130 feet; no gas limits	100 percent coinsurance for dive accidents	TravelAssist benefit (limit: \$100,000) included with DAN membership and provided by MedAire covers evacuation and transportation and need not be dive-related.
	Master	\$64 (\$35 premium, plus \$29 DAN membership)	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$125,000 lifetime	Nondiving accidents; evacuations less than 50 miles from home	None	100 percent coinsurance for dive accidents; death and dismemberment (\$15,000); permanent and total disability (\$15,000); lost scuba equipment (\$2,500); extra accommodations (\$1,500); extra transportation (\$1,000)	TravelAssist benefit (limit: \$100,000) included with DAN membership and provided by MedAire covers evacuation and transportation and need not be dive-related.
	Preferred	\$99 (\$70 premium, plus \$29 DAN membership)	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$250,000 per occurrence	Evacuations less than 50 miles from home	None	Nondiving medical emergencies in foreign countries (\$10,000 lifetime, less \$250 deductible); 100 percent coinsurance for dive accidents; death and dismemberment (\$15,000); permanent and total disability (\$15,000); lost scuba equipment (\$2,500); extra accommodations (\$3,000); extra transportation (\$2,000); vacation cancellation (\$10,000 lifetime less \$250 deductible); vacation interruption (\$5,000 lifetime less \$250 deductible)	TravelAssist benefit (limit: \$100,000) included with DAN membership and provided by MedAire covers evacuation and transportation and need not be dive-related.
<b>PADI Diver Protection</b> (800) 223-9998 <a href="http://www.diveinsurance.com">www.diveinsurance.com</a>	Silver	\$44	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$50,000 per occurrence	Nondiving accidents	130 feet; no gas limits	Death and disability due to diving accident (\$15,000); repatriation of remains (\$5,000); extra accommodations (\$2,000); extra transportation (\$1,000); AssistAmerica travel assist benefits including evacuation and transportation for nondiving medical emergencies, guaranteed hospital admission, etc.	Any certified diver qualifies. (Need not be PADI.) No minimum mileage from home for evacuation, but advance authorization required. Every Diver Protection Program enrollment provides a donation to the PADI Chamber Endowment Fund.
	Gold	\$67	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$100,000 per occurrence	Nondiving medical expenses in home country	None	Nondiving medical emergencies outside home country (\$10,000 lifetime less \$250 deductible); death and disability due to diving accident (\$15,000); repatriation of remains (\$5,000); extra accommodations (\$3,000); extra transportation (\$2,000); vacation cancellation (\$5,000 per year); vacation interruption (\$2,500 per year); AssistAmerica travel assist benefits including evacuation and transportation for nondiving medical emergencies, guaranteed hospital admission, etc.	Any certified diver qualifies. (Need not be PADI.) No minimum mileage from home for evacuation, but advance authorization required. Every Diver Protection Program enrollment provides a donation to the PADI Chamber Endowment Fund.
	Platinum	\$97 (\$75 for PADI Diving Society members)	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$275,000 per occurrence	Nondiving medical expenses in home country	None	Nondiving medical emergencies outside home country (\$15,000 lifetime less \$250 deductible); death and disability due to diving accident (\$15,000); repatriation of remains (\$5,000); extra accommodations (\$3,000); extra transportation (\$2,000); vacation cancellation (\$10,000 per year); vacation interruption (\$5,000 per year); AssistAmerica travel assist benefits including evacuation and transportation for nondiving medical emergencies, guaranteed hospital admission, etc.	Any certified diver qualifies. (Need not be PADI.) No minimum mileage from home for evacuation, but advance authorization required. Every Diver Protection Program enrollment provides a donation to the PADI Chamber Endowment Fund.



PROVIDER	PLAN	COST	COVERS	LIMIT	DOESN'T COVER	DEPTH OR GAS LIMITS	OTHER COVERAGE (LIMITS)	COMMENTS
DiveSafe (800) 665-5252 www.divesafeinsurance.com	Standard	\$55	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$100,000 lifetime	Nondiving medical emergencies; evacuations less than 100 miles from home	None	Death and dismemberment (\$10,000); permanent disability (\$10,000); vacation cancellation or interruption (\$2,500); loss of scuba gear (\$2,500); repatriation of remains (\$2,500); transportation home if you miss your return flight (\$2,500)	Covers medical expenses within one year of the accident. A portion of the premium is donated to the Coral Reef Alliance and to the Reef Environmental Education Foundation.
	Student	\$15	All medical expenses due to an in-water accident during an open-water scuba course; transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$25,000 less \$25 deductible for medicine only	Evacuation	None	None	Students of certified instructors who are part of a participating dive training operation are covered for duration of their open-water training up to six months. Students must be age 10 or more at beginning of training. Once certified, cost may be applied to Gold or Platinum membership
	Gold	\$75	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$250,000 per accident; no lifetime or annual limit	Repatriation of remains less than 100 miles from home	None	Death, disablement or paralysis (\$10,000); repatriation of remains (\$5,000); personal dive equipment (\$2,500); trip interruption (\$1,000 less \$100 deductible); trip cancellation (\$1,000 less \$100 deductible); travel protection (\$5,000)	Premium includes DiveAssure Association membership
DiveAssure (898) 898-0921 www.diveassure.com	Platinum	\$95	Evacuation and transport to nearest hospital or clinic; doctor's treatment; hospital treatment; recompression chamber fees	\$500,000 per accident; no lifetime or annual limit	Repatriation of remains less than 100 miles from home	None	Death, disablement or paralysis (\$25,000); repatriation of remains (\$10,000); personal dive equipment (\$5,000); trip interruption (\$10,000 less \$100 deductible); trip cancellation (\$10,000 less \$100 deductible); travel protection (\$10,000)	Platinum plan covers nondiving medical emergencies while on a dive vacation. Policyholder and traveling companions or immediate family are covered. AIG Assist "Travel Protection" benefit includes extra tickets, hotels, etc., for policyholder and family needed because of the emergency. Premium includes DiveAssure Association membership.
	Class A	\$25	Chamber treatment; attending physician; related expenses	\$15,000 per incident	Accidents on deck of dive boat	Intentional dive below 120 feet; mixed gas other than recreational nitrox (32 percent and 36 percent oxygen)	Injuries on cruise ships excluded	Class A, B, C and D plans can be combined (\$25 minimum total). In-water coverage only. Coinsurance only. You must have primary health insurance.
	Class B	\$10	All other injuries when diving or snorkeling	\$15,000 per incident	Nondiving accidents	Intentional dive below 120 feet; mixed gas other than recreational nitrox (32 percent and 36 percent oxygen)	Injuries on cruise ships excluded	Class A, B, C and D plans can be combined (\$25 minimum total). In-water coverage only. Coinsurance only. You must have primary health insurance.
Diver's Security Insurance (800) 288-4810 www.divers-security.com	Class C	\$5	Transportation (air, water or ground) to nearest hospital or emergency facility	\$15,000 per incident	Nondiving accidents	Intentional dive below 120 feet; mixed gas other than recreational nitrox (32 percent and 36 percent oxygen)	Injuries on cruise ships excluded	Class A, B, C and D plans can be combined (\$25 minimum total). In-water coverage only. Coinsurance only. You must have primary health insurance.
	Class D	\$20	Nondiving water-sports or boating injuries	\$15,000 per incident	Accidents on the deck of the dive boat	None	Excludes jet skis, boat racing and parasailing	Class A, B, C and D plans can be combined (\$25 minimum total). In-water coverage only. Coinsurance only. You must have primary health insurance.



## BOB BRAYMAN'S INTERNATIONAL DIVING CAREER INSTITUTE AT HALL'S

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### Lucrative Careers in Paradise

The International Diving Career Institute at Hall's provides training for serious people looking to start new, lucrative careers in diving. For more than 20 years, the exclusive Florida Keys training programs at Hall's have gone far beyond the ordinary for dive industry employers.

Located in Marathon at Faro Blanco Resort and Hall's Diving Center, the Institute's extensive, copyrighted programs include comprehensive Instructor/Divemaster training at a *real* dive center resort. Plus, there's training in rebreather, technical, diver propulsion vehicles, wet submarines, underwater communications, business operations/sales, equipment repair, digital photography/videography, and computer editing.

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### Awesome Diving and Big-Time Savings!

For divers in search of world-class diving and an all-inclusive resort in one package, Iberostar Cozumel provides a perfect combination.



A luxurious all-inclusive resort located 12 miles south of Cozumel's downtown area and just 20 minutes from the airport, Iberostar Cozumel is the southernmost hotel on the island and just a few minutes boat ride from some of Cozumel's most famous dive sites, including the Santa Rosa Wall, Columbia Reef, legendary Palancar Reef and many more.

Visiting divers will find 300 guestrooms in bungalow-style, two-story, thatched-roof buildings, surrounded by lush and exuberant tropical gardens that blend in perfectly with the tropical landscape. A beautiful beach, varied dining, lively bars, and the professionalism and experience of their on-site operator Dressel Divers complete your vacation!

A fully all-inclusive stay at Iberostar Cozumel includes all meals, unlimited bar, entertainment, and many activities. Plus, there's a super summer special price reduction for divers in the know!

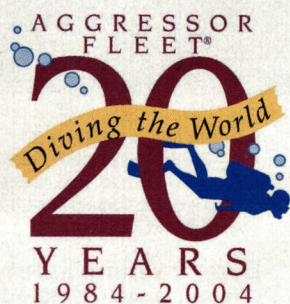
Now! Save \$100/person--reduced to \$999 per person, the summer special includes: seven nights hotel accommodations; five days of two-tank boat diving; all meals; unlimited bar; nightly entertainment shows and theme parties; and an array of daily activities. Rates (taxes included) are per person, double occupancy, and are valid July 1 to August 31, 2004. (And, up to two kids age 12 and under are free with two parents.)

Call or e-mail for discount airfare to the island.

### CONTACT

**Iberostar Dive Vacations**  
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20 Years of Live-Aboard Excellence



Fiji Aggressor II



Aggressor did not invent the live-aboard concept 20 years ago, but they did propel the boats from smelly dormitories with pb&j sandwiches to floating resorts with private air-conditioned staterooms, hot tubs, delicious meals, and many other upscale amenities. They were also pioneers in many live-aboard destinations like Belize, Coco Island, and Tahiti.

Aggressor also prides itself on catering to photographers, with E-6 processing and, more recently, digital cameras, as well as hosting the most prominent photographers and videographers including the late Jim Church, Stan Waterman, Mike Mesgleski, Mike Haber, Mauricio Handler, and Howard Hall (September 2004 in Belize).

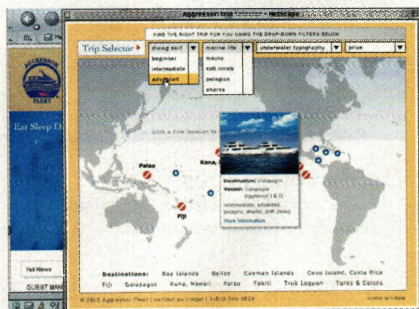
Though luxury is obviously important, safety is still Aggressor's highest priority. Drift divers in Tahiti, Coco Island and Galapagos have personal EPIRBs (emergency position indicating radio beacons), while each Aggressor vessel is equipped with a defibrillator, which emits an electrical charge to a heart

attack victim. Several boats even have e-mail service and satellite communication at sea.

Family weeks, tech diving expeditions in Truk Lagoon, warm freshwater rinse showers, in-room DVD players, and much more keep Aggressor at the forefront of live-aboard diving even after 20 years.

And as everyone asks "what's next?", Aggressor responds with new destinations, services, and safety features. They look and listen to the diving public and respond to their needs and wants.

Visit [www.aggressor.com](http://www.aggressor.com) and click on "Why Choose Aggressor," which provides a great overview of 20 years of innovation! The all-new web site also includes great sections like "Captain's Logs," "Dealer Locator," and "Trip Selector" (where you provide your trip and diving parameters and the web site provides perfect live-aboard options).



## CONTACT

# AGGRESSOR FLEET

## 800-348-2628

[scuba@aggressor.com](mailto:scuba@aggressor.com) • [www.aggressor.com](http://www.aggressor.com)



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www.habitatdiversorts.com  
Plaza Resort Bonaire > 1-800-766-6016  
www.plazaresortbonaire.com  
Port Bonaire/Toucan Diving > 1-800-766-6016  
www.plazavillas.com  
Sand Dollar Condominium Resort > 1-800-288-4773  
www.sanddollarbonaire.com

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Cayman Airways > 1-800-4CAYMAN  
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www.divelodge.com  
Cayman Islands Dept. of Tourism > 1-877-4-CAYMAN  
www.divecayman.ky  
Dive Tech at Cobalt Coast > 1-866-622-9626  
www.divetech.com  
Divi Tiara Beach Resort > 1-800-661-3483  
www.diviresorts.com  
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www.donfosters.com  
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www.edenrockdive.com  
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www.moheadmanor.com  
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www.oceanfrontiers.com/rodalas  
Red Sail Sports > 1-877-RED-SAIL  
www.redsailcayman.com  
Reef Divers > 1-888-716-7400 www.reefseas.com  
Seaview Hotel & Dive Resort > 1-866-945-0558  
www.seaviewdivers.com

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www.caradonna.com  
Casa del Mar > 800-328-2288  
www.caradonna.com  
El Cid, La Ceiba/Dive with Martin > 1-800-897-5553  
www.elcid.com, www.divewithmartin.com  
Fideicomiso de Promocion Turistica de Cozumel >  
011-52-987-87-27638 www.islacozumel.com.mx  
Plaza Las Glorias/Dive Paradise/Bay Adventures >  
1-888-599-DIVE www.bayadventures.com  
Sand Dollar Sports > 1-888-SDS-MEXX  
www.sanddollarsports.com

## Florida & Florida Keys

The Florida Keys and Key West > 1-800-FLA-KEYS  
www.fl-keys.com/diving

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www.grandturkscuba.com  
Oasis Divers > 1-800-892-3995 www.oasisdivers.com  
Osprey Beach Hotel > 1-649-946-2226  
www.ospreybeachhotel.com  
Provo Turtle Divers > 1-800-833-1341  
www.ProvoTurtleDivers.com  
Sea Eye Diving > 1-800-513-5823 www.seaeyediving.com  
Seabreeze Guest House > 1-649-946-1594  
www.seabreeze.tc  
Turks & Caicos Tourist Board > 1-800-241-0824  
www.turksandcaicostourism.com

## United States Virgin Islands

Cane Bay Dive Shop > 1-800-338-3843  
www.canebayscuba.com  
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www.stcroixscuba.com  
USVI Tourism > 1-800-372-USVI  
www.usvitourism.vi

## Apparel

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## Dive Equipment

Akona > 1-949-581-8069 www.akona.com  
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www.dui-online.com  
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## Live-Aboards

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www.blackbeard-cruises.com  
Explorer Ventures > 1-800-322-3577  
www.explorerventures.com  
Manthiri > 1-877-357-0022 www.manthiri.com  
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Note: Subject to change



# Depth

1



**GREAT DIVES: DE PALM SLOPE, ARUBA, P. 17** • De Palm Slope offers divers the opportunity to explore a varied, aquarium-like ecosystem at a maximum of 27 feet and a less-explored wall that drops off to 150 feet with visibility up to 60 feet. A passenger ferry provides a ride from Aruba's mainland to the privately owned De Palm Island, where an easy shore entry leads to De Palm Slope. You need to bring your own tank and equipment to dive the wall, but De Palm Tours offers the rest: guided snorkel tours, food and drinks, beach chairs, and many other activities. **Contact:** De Palm Tours, (011) 297-582-4400, [www.depalm.com](http://www.depalm.com).

**GREAT DIVES: TOAU PASS, FRENCH POLYNESIA, P. 18** • A visit to Toau Pass in the low-lying Tuamotu Archipelago will likely start with a one-hour flight from Papeete, Tahiti, to Rangiroa, which is approximately 125 miles from Toau. It's best to book a trip on a live-aboard, as the Tuamotus cover an area 930 miles long and 310 miles wide with little or no population on most atolls. The visibility stretches more






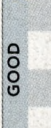











than 130 feet and water temperature stays between 79 and 84 degrees year-round. **Live-Aboards:** *Tahiti Aggressor*, (800) 348-2628, [www.aggressor.com](http://www.aggressor.com); *Archipels Croisieres*, (011) 689-56-36-39, [www.archipels.com](http://www.archipels.com); *Aqua Polynesie*, (011) 689-73-47-31, [aquapol@clubinternet.fr](mailto:aquapol@clubinternet.fr); *VPM Dufour Yachting*, (011) 153-14-59-59, [www.bestsail.net](http://www.bestsail.net).

**GREAT DIVES: CAT ROCK, CALIFORNIA, P. 20** • It takes a boat to reach Anacapa Island in the Channel Islands National Park, about 20 miles off the California coast. Island cliffs and rocks shelter Cat Rock from bad weather except in late summer when sea swells hit from the south. The

diving is easy to moderate, depending on weather conditions, with depths ranging from 20 to 55 feet. Visibility hovers at 30 to 40 feet. **Charter Boats:** *Beach Hopper II*, (415) 479-4332, [www.marinskindiving.com](http://www.marinskindiving.com); *Cypress Sea*, (408) 244-4433, [www.cypress-charters.com](http://www.cypress-charters.com); *Diving Charters/Sand Dollar*, (877) 444-BOAT, [www.divingcharters.com](http://www.divingcharters.com); *Dive Central/Escape*, (877) GO-2-DIVE, [www.divecentral.com/escape/information.html](http://www.divecentral.com/escape/information.html); *Monterey Express*, (888) 422-2999, [www.montereyexpress.com](http://www.montereyexpress.com); *Monterey Bay Dive Center/Silver Prince*, (800) 60-SCUBA, [www.montereyscubadiving.com](http://www.montereyscubadiving.com); *Truth Aquatics/Truth, Conception and Vision*, [www.truthaquatics.com](http://www.truthaquatics.com).



## REGULATORS RATED, P. 52

MANUFACTURER Product Name	REGULATOR FEATURES										ERGO PERFORMANCE					
	PRICE	WARRANTY	MADE IN	1st STAGE	PORTS	2nd STAGE	2nd STAGE ADJUSTMENTS	FACTORY-READY NITROX-CAPABLE	EASE OF BREATHING	DIFFERENT POSITIONS	DIVES DRY	BUBBLE INTERFERENCE	EASE OF CLEARING	COMFORT	ADJUSTMENTS	
UNDER \$500																
 AQUA LUNG Calypso II	\$249	limited lifetime	France	unbalanced piston	1 HP 4 LP	unbalanced	dive/pre-dive	up to 40%	4	3	4	4	4	4	4	4
 MARES MR12/Axis Pro	\$249	limited lifetime	Italy	balanced diaphragm	2 HP 4 LP	unbalanced	none	no	4	3	4	3	4	3	N/A	
 MARES R2/Axis Pro	\$209	limited lifetime	Italy	unbalanced piston	1 HP 4 LP	unbalanced	none	no	4	3	4	3	4	3	N/A	
 SHERWOOD Brut	\$260	2-year limited	USA	unbalanced piston	1 HP 4 LP	unbalanced	none	no	3	3	4	4	3	4	N/A	
 SHERWOOD Magnum	\$315	2-year limited	USA	balanced piston	2 HP 4 LP	unbalanced	none	no	3	3	4	4	3	4	N/A	
 SHERWOOD Oasis	\$410	2-year limited	USA	balanced piston	2 HP 5 LP	unbalanced	none	no	3	3	3	4	4	3	N/A	
 SHERWOOD Blizzard	\$410	2-year limited	USA	balanced piston	2 HP 5 LP	unbalanced	none	no	3	3	3	4	4	3	N/A	
OVER \$500																
 SCUBAPRO MK25/X650	\$549	limited lifetime	Italy	balanced piston	2 HP 5 LP	balanced	resistance knob; dive/pre-dive	up to 40%	5	4	4	3	4	4	4	4
 ZEAGLE Flathead VI/ZX	\$579	limited lifetime	USA	balanced diaphragm	2 HP 4 LP	balanced	resistance knob; dive/pre-dive	up to 40%	4	4	4	4	4	3	3	
 APEKS Black Pearl	\$769	limited lifetime	UK	overbalanced diaphragm*	2 HP 4 LP	balanced	resistance knob; dive/pre-dive	up to 40%	4	4	4	3	5	4	4	
 ZEAGLE Flathead XP/ZX	\$499**	limited lifetime	USA	balanced diaphragm	2 HP 4 LP	balanced	resistance knob; dive/pre-dive	up to 40%	4	3	4	4	4	3	3	
 MARES V16/Proton Metal	\$529	limited lifetime	Italy	balanced diaphragm	2 HP 4 LP	unbalanced	none	no	4	3	4	3	4	4	N/A	
 MARES V32/Proton Ice	\$529	limited lifetime	Italy	balanced diaphragm	2 HP 4 LP	unbalanced	none	no	4	3	4	3	4	4	N/A	
 OCEAN MASTER Deep Limit Brass Plus	\$525	2 years	Japan	balanced twin piston	2 HP 4 LP	unbalanced	resistance knob	up to 40% (w/EAN kit)	4	4	4	3	4	4	3	
 SHERWOOD Maximus	\$580	2-year limited	USA	balanced piston	2 HP 5 LP	unbalanced	resistance knob; dive/pre-dive	no	3	3	3	4	2	2	2	

RATING SYSTEM FOR ERGONOMIC PERFORMANCE: 5=EXCELLENT 4=VERY GOOD 3=GOOD 2=FAIR 1=POOR

\* According to Apeks, an overbalanced first stage increases interstage pressure at a rate faster than a traditional balanced model to help compensate for denser air.

\*\* When the Zeagle Flathead XP/ZX was tested, the manufacturer's suggested retail price was \$529; thus, it was included in the Over \$500 price category.

## REGULATOR TESTING: IN THE WATER

Scores of ergonomic criteria are weighted by importance, as follows:

## MOST IMPORTANT

**EASE OF BREATHING:** How well does the regulator deliver air while the diver is propelling himself forward in the standard swimming position?

**DIFFERENT POSITIONS:** How does the regulator breathe when the diver is in a heads-up or face-down position?

**DRYNESS:** Divided into two parts: Does the regulator breathe wet or dry during (1) normal swimming position and (2) odd swimming positions?

## MODERATELY IMPORTANT

**BUBBLE INTERFERENCE:** Taking into account that all regulators produce bubble interference to a certain degree, when looking down, straight ahead, up at a 45-degree angle and straight up, do the bubbles rise into the diver's field of view at a rate that is average, less than average or greater than average?

**EASE OF CLEARING:** Divided into two parts: 1) How difficult is it to find and use the purge, and how force-

ful is the purge? 2) How much force is required to clear the regulator by using the blowing method?

## CONVENIENCE ELEMENTS

**COMFORT:** How comfortable is the mouthpiece? How does the second stage feel in the mouth? Does hose length and stiffness restrict head movement or otherwise cause discomfort?

**ADJUSTMENTS:** If the regulator has diver-controlled adjustments, how easy are they to find, grip and turn? Do they do their job in a reasonable manner?

## SIMULATOR CHART SCORING

Breathing simulators are great indicators of a regulator's abilities, as expressed in EXT WOB (External Work of Breathing, the sum of the inhalation and exhalation effort expressed in joules per liter, or J/L). However, with a machine as accurate as the ANSTI simulator, competing regulators produce a litany of J/L scores differing from one another by a matter of tenths and even hundredths of a point.

So for the sake of simplicity, and to avoid losing perspective in the original goal (which is to isolate good-breathing regulators) by becoming obsessed with decimal points, we've translated J/L scores into three basic classifications: Good, Very Good and Excellent. Here's what each represents:

**3 = GOOD** ➤ Any regulator that can achieve the breathing rate/depth category with an EXT WOB of less than 3.0 J/L (the EN250 limit).

**4 = VERY GOOD** ➤ Any regulator that can achieve the breathing rate/depth category in half or less of the EN250 standard limit, or an EXT WOB of 1.5 J/L.

**5 = EXCELLENT** ➤ Any regulator that can achieve the breathing rate/depth category with an EXT WOB of 1.0 J/L or less. (While tenths or hundredths of a point of variation between WOBs is detectable only by a machine, a diver in the water can in fact discern the difference in breathing of one-half a J/L, especially when diving at greater depths.)





## BREATHING SIMULATOR PERFORMANCE

MANUFACTURER Product Name	A	B	C	D	TOTAL
UNDER \$500					
AQUA LUNG Calypso II	5	5	5	4	19
MARES MR12 Axis Pro	5	5	5	4	19
MARES R2 Axis Pro	5	4	5	4	18
SHERWOOD Brut	4	3	3	3	13
SHERWOOD Magnum	4	3	3	3	13
SHERWOOD Oasis	4	3	3	3	13
SHERWOOD Blizzard	4	3	3	3	13
OVER \$500					
SCUBAPRO MK25/X650	5	5	5	5	20
ZEAGLE Flathead VI/ZX	5	5	5	5	20
APEKS Black Pearl	5	4	5	4	18
ZEAGLE Flathead XP/ZX	5	5	5	4	19
MARES V16 Proton Metal	5	4	5	4	18
MARES V32 Proton Ice	5	4	4	4	17
OCEAN MASTER Deep Limit Brass Plus	4				4
SHERWOOD Maximus	4	3	3		10

**Note:** Blank spaces indicate that the regulator was not able to achieve the RMV/depth category without exceeding the 25 millibar test limits on either inhalation or exhalation.

## SIMULATOR CHART DEFINITIONS

**COLUMN A** > 37.5 RMV @ 132 fsw: The maximum recreational depth at a somewhat aggressive breathing rate.

**COLUMN B** > 75 RMV @ 132 fsw: The maximum recreational depth looked at as 1) an extremely heavy work rate or 2) loosely simulating two divers buddy-breathing at a somewhat aggressive breathing rate.

**COLUMN C** > 62.5 RMV @ 165 fsw: The European conformance standard EN250. This is also the depth and breathing rate commonly used by manufacturers when assessing a regulator's performance.

**COLUMN D** > 62.5 RMV @ 198 fsw: The U.S. Navy's Class A test depth and breathing rate, but using a lower high-pressure supply pressure.

**WARNING:** We test at depths that exceed recreational limits to show both how these regulators perform and their reserve potential. This is not to suggest that you should take them that deep. Scuba Diving doesn't recommend diving deeper than the recreational depth limits.

## CHOOSING A REGULATOR

There are two priorities to consider when choosing a regulator.

Priority One:  
Breathing Performance

A good reg delivers air on demand with a low work of breathing regardless of depth. So go straight to the total simulator score. Higher is better on our 20-point scale. However, a reg's breathing performance in specific tests is also useful. Experts recommend scores of at least 4 at the depths you dive. For most recreational divers, that would be Column A. Column B indicates how the reg would perform in an air-sharing emergency. Columns C and D simulate aggressive breathing rates at extreme depths. Columns B, C and D are all good indicators of a reg's reserve capacity. Note: Simulator tests were performed at a supply pressure of 725-760 psi. If a regulator can perform well at this relatively low supply pressure, it will perform as well or better at higher supply pressures.

Priority Two:  
Ergonomic Performance

Some regs may score well on the machine but have annoying habits in the water, such as breathing hard or wet in odd positions. And no machine can give you the human perspective on how easy it is to purge a regulator, or a sense of bubble interference. If you can't test dive a reg yourself, use the Ergonomic Performance ratings from our team of diverse test divers.

## Other Considerations

**Number of ports.** One or two high-pressure ports, with four or five low-pressure ports, is the norm. More ports means better hose routing options.

**Nitrox capability.** Not all regs come factory-ready for oxygen-enriched breathing gases.

**Second stage adjustments.** Dive/pre-dive switch-

es are useful to prevent free-flows on the surface. Resistance knobs are typically designed to prevent positive pressure breathing.

**Piston or diaphragm first stage.** To admit air from the tank into the regulator, first stages use a piston sliding in a smooth cylinder or a diaphragm (like a loose drumhead) that flexes. Each has advantages and disadvantages, but there is no practical difference in performance.

**Balanced or unbalanced first stage.** Balancing is an attempt to keep air delivery stable when tank pressures are low or demand on the regulator is high. However, many unbalanced first stages offer breathing performance very similar to balanced ones. Balanced second stages can make the airflow more consistent.

**Environmental sealing.** Environmentally sealed first stages keep water out of the workings and prevent icing in cold water.

**The mouthpiece.** Some manufacturers offer unique mouthpieces, designed to improve comfort. Some divers like them, some don't. It's also the easiest and cheapest thing to replace.

## How We Pick Testers' Choices

ScubaLab Testers' Choice ratings are awarded within price ranges based on adjusted scores for ergonomic performance (actual scores x 3 for "Most Important" categories, actual scores x 2 for "Moderately Important" categories, and actual scores x 1 for "Convenience Elements" excluding user adjustments), plus the total simulator score.

## FOR MORE INFORMATION

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## 3



**DIVE LOG: DOMINICA, P. 60 • Dive Conditions:** Water temperatures are mild year-round, never dipping below 75 degrees. Visibility is always at least a respectable 60 feet, and sometimes can exceed more than 100 feet. **Documents:** U.S. and Canadian citizens need a passport, though a birth certificate and photo ID will suffice. **Money Matters:** The official currency is the Eastern Caribbean dollar. **Language:** English is the official language, but many locals speak Creole, a French patois. **Dive Operators:** Castle Comfort Dive Lodge and Dive Dominica, [www.castlecomfortdivelodge.com](http://www.castlecomfortdivelodge.com); Fort Young Hotel and Dive Center, [www.fortyounghotel.com](http://www.fortyounghotel.com); Nature Island Dive, [www.natureislanddive.com](http://www.natureislanddive.com); Cabrits Dive Centre, [www.cabritsdive.com](http://www.cabritsdive.com). **For More Information:** Dominica Tourist Office, [www.dominica.dm](http://www.dominica.dm); Scott's Head Soufrière Marine Reserve, [www.avirtualdominica.com/ssmr](http://www.avirtualdominica.com/ssmr) or [www.dominicamarinereserves.com](http://www.dominicamarinereserves.com).

## 5



## TRAVEL GUIDE FLA. KEYS, P. 34 • GETTING THERE >

The Overseas Highway (U.S. 1) links the entire chain of islands with 112 miles of roadway and 43 bridges. During peak season, traffic moves slowly, but on most days you can expect a trip from Miami to Key West to take about four hours. Although there are flights to Marathon and Key West from major Florida cities, most travelers to the Keys fly to Miami or Ft. Lauderdale, rent a car and head south. The fastest route from either city is the Florida Turnpike, which links up to U.S. 1 in Florida City. **DIVE CONDITIONS** > In winter (October to March), seas range from three to six feet (more than four feet is generally undivable). Summer seas (April to September) are generally calmer, from one to three feet. In winter, expect temps in the mid-70s. In summer, water temps warm to the mid- to upper 80s. **DIVE OPERATORS** > For detailed information on Florida Keys dive operators, comprehensive travel guides, special dive deals and recent trip reports submitted by users, click on TripFinder at the top of our home page, [www.scubadiving.com](http://www.scubadiving.com). **FOR MORE INFORMATION** > Florida Keys & Key West Tourism Council, [www.flakeys.com](http://www.flakeys.com); Florida Keys National Marine Sanctuary, [www.fknms.nos.noaa.gov](http://www.fknms.nos.noaa.gov); John Pennekamp Coral Reef State Park, [www.pennekampark.com](http://www.pennekampark.com).

## 4



## Drive & Dive: Montana and Wyoming, p. 41

### Firehole River, Yellowstone Park, Wyo.

> Take Firehole Canyon Drive until you reach the swimming area. The drive is a one-way road and begins at the Madison end. Parking is limited and the road is quite narrow. Use precaution. **Yellowstone River, Livingston, Mont.** > U.S. Highway 89. Use any of the state fishing accesses along the river. Exercise extreme caution—this river is also famous for white-water rafting. **Lake McDonald, Glacier National Park, Mont.** > Glacier Park is located in northwestern Montana. Lake McDonald is in the western edge of the park. To reach Lake McDonald, enter the park through West Glacier. Camping and lodging is available at Apgar. **Yellowstone Lake, Yellowstone National Park, Wyo.** > Yellowstone Lake is located in the southern part of Yellowstone Park. The lake is easily reached from the east, west or south entrances as it's about the same distance from any of them. Camping and lodging is available at West Thumb and Grant Village. Reservations are recommended. **Bighorn Canyon National Recreation Area, near Hardin, Mont.**

> From Hardin, Mont., drive south to Fort Smith, Mont., on Highway 313. At Fort Smith, proceed to the Yellowtail Dam. The access at this end of the lake is entirely by boat, but rentals are available at the marina. **Local Dive Shops:** Adventure Scuba, 1211 Grand Ave., Billings, Mont., (406) 259-7363, [www.dive-montana.com](http://www.dive-montana.com); the Sports Cove, 405 1/2 Main, Bozeman, Mont., (406) 585-9926, [www.dive-montana.com](http://www.dive-montana.com). **For More Information:** Yellowstone National Park, [www.nps.gov/yell/home.htm](http://www.nps.gov/yell/home.htm), Glacier National Park, [www.nps.gov/glac/home.htm](http://www.nps.gov/glac/home.htm), and Bighorn Canyon National Recreation Area, [www.nps.gov/bica](http://www.nps.gov/bica).



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Jamie Ireland is a freelance writer in the areas of sex, fitness, romance, and travel.

# Hot Spot

# the inside story on Great Sex!

by Jamie Ireland

## Learning "The Ropes"...

**T**his month I got a letter from a reader in Texas about a "little secret" that has made her sex life with her husband absolutely explosive. (Those Texans know their stuff, let me tell you.)

Tina writes:

Dear Jamie,

*Last month my husband returned from a business trip in Europe, and he was hotter and hornier than ever before, with more passion than he has had for years. It was incredible. He flat wore me out! And the best part of all—he was having multiple orgasms. I know what you're thinking... men don't have multiples, but trust me he was, and his newfound pow! pow! power! stimulated me into the most intense orgasms I've ever had. So, before we knew it, we were both basking in the glow of the best sex of our lives!*

*We tried tantric stuff in the past, and the results were so-so. But this was something new and exciting, completely out of the ordinary. I asked my husband what had created such a dramatic change in our lovemaking and he told me he'd finally learned "the ropes."*

*On the last night of his business trip my husband spent an evening dining out with a Swedish nutritionist and his wife of 20 years. The couple was obviously still quite enamored with each other, so my husband asked their secret. The nutritionist told him their sex life was more passionate than ever. Then he pulled*



*a small bottle from his satchel and gave it to my husband. The bottle contained a natural supplement that the nutritionist told my husband would teach him "the ropes" of good sex.*

*My husband takes the supplement every day. The supply from the nutritionist is about to run out and we desperately want to know how we can find more. Do you know anything about "the ropes," and can you tell us how we can find it in the States?*

*Sincerely,*

*Tina C., Ft. Worth, Texas*

**T**ina, you and the rest of our readers are in luck, because it just so happens I do know about "the ropes" and the supplement your husband's Swedish friend likely shared.

The physical contractions and fluid release during male orgasm can be multiplied and intensified by a product called Ogöplex Pure Extract™. It's a daily supplement specially formulated to trigger better orgasmic experiences in men. The best part, from a woman's perspective, is that the motion and experience a man can achieve with

Ogöplex Pure Extract can help stimulate our own orgasms, bringing a whole new meaning to the term simultaneous climax!

The term used by the Swedish nutritionist is actually fairly common slang for the effect your husband experienced. The enhanced contractions and heightened orgasmic release are often referred to as ropes because of the rope-like effect of release during climax. In other words, as some people have said, "it just keeps coming and coming and coming."

As far as finding it in the States, I know of just one importer—Böland Naturals. If you are interested, you can contact them at 1-866-276-1232 or [ogoplex.com](http://ogoplex.com). Ogöplex is all-natural and safe to take. All the people I've spoken with have said taking the once-daily tablet has led to the roping effect Tina described in her letter.

Aren't you glad you asked?

*Jamie Ireland*

Jamie Ireland



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## Of Interest to All

**MARINE LIFE BOOKS** - A complete library for divers - identification, Behavior, CD-ROMS. Paul Humann & Ned DeLoach. [www.fishid.com](http://www.fishid.com), 800-737-6558

## Photography

**BERGER BROS. CAMERA, DIGITAL, VIDEO** - Underwater housings, digital cameras, lighting & more from major brands including: Gates, Sea&Sea, Ikelite, Nikonos, Amphibico, Light & Motion, Sealife, Ultralight & more. 800-262-4160 [www.berger-bros.com](http://www.berger-bros.com)

## Scuba Shop For Sale

**DIVESHOPSFORSALE.COM** - Sell, buy or learn how to successfully operate a PROFITABLE Dive business.

## Web Sites

**FREE LOGBOOK!** - Log dives & attach pictures on [www.diverecord.com](http://www.diverecord.com), your personal logbook on the Internet. Learn from the vast logged experience.

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# LOOK



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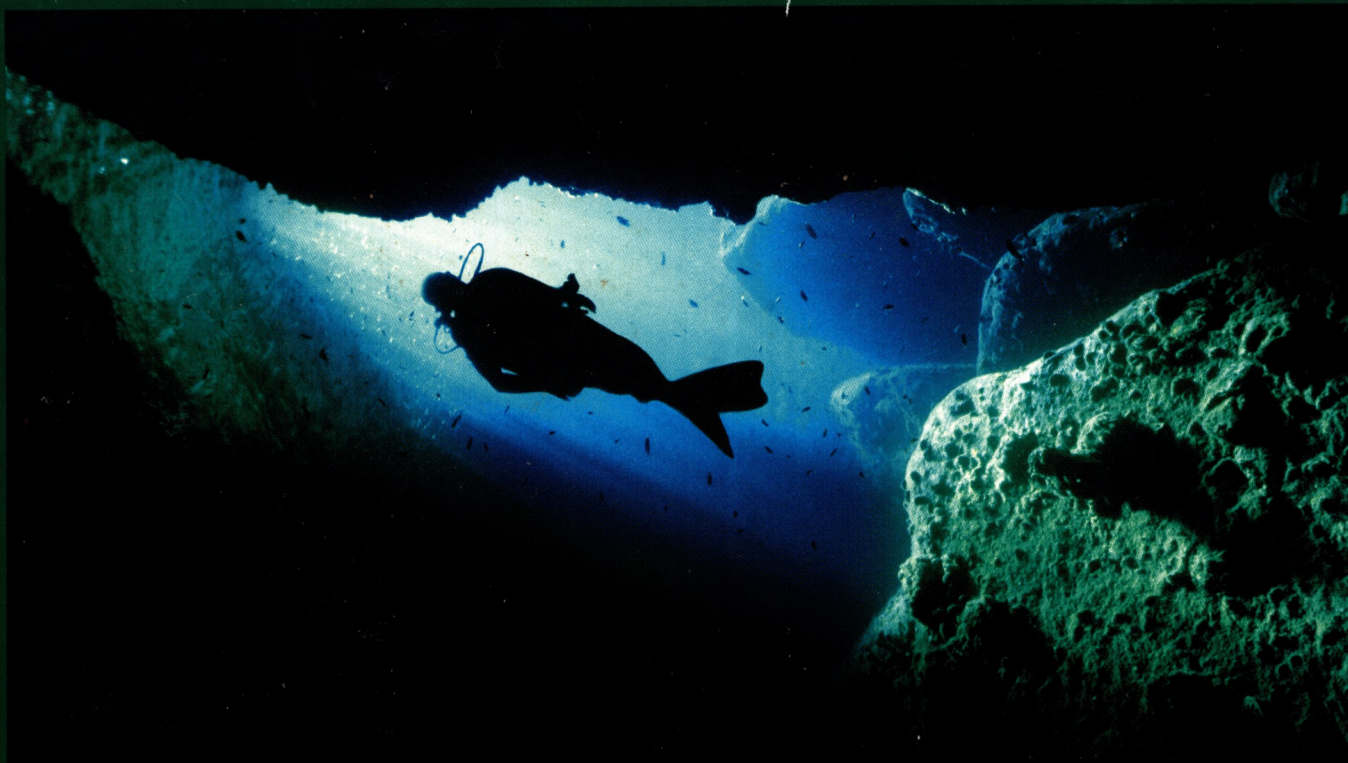
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